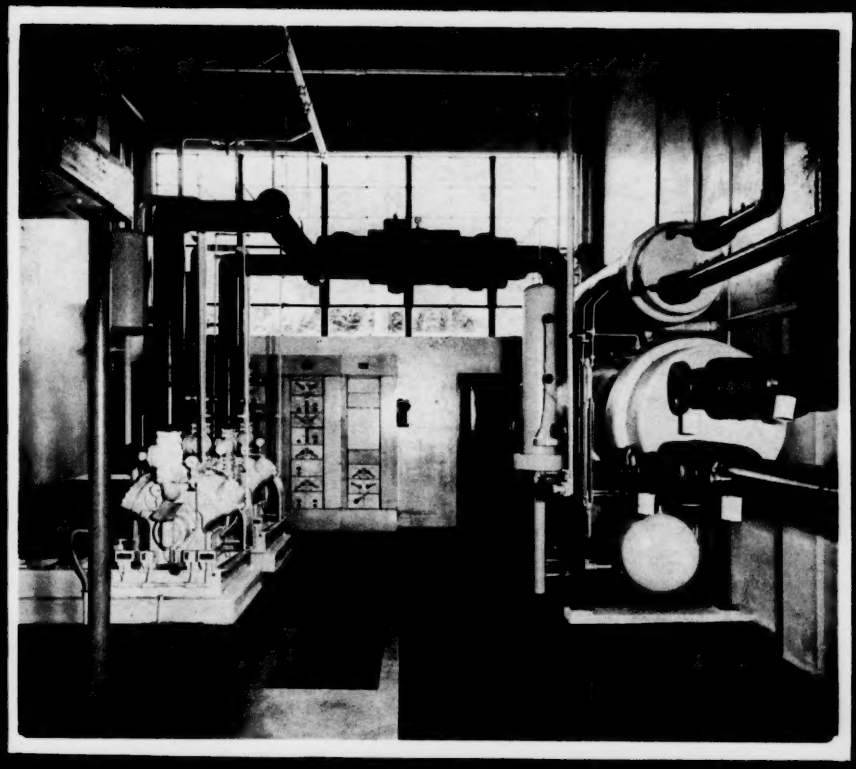
ICE and REFRIGERATION

THE NAT
INDUSTRIA



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JUNE • 1952

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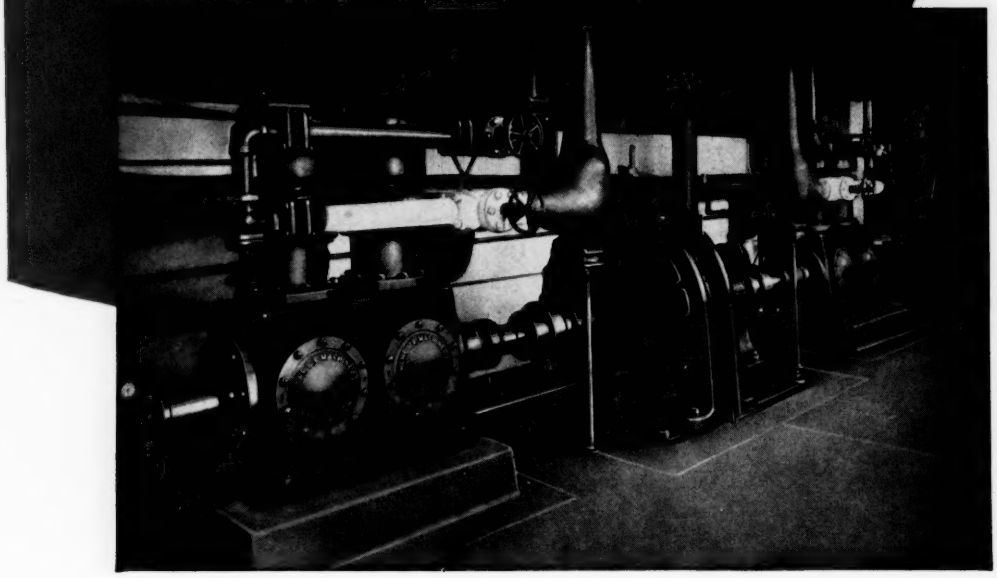
IMPROVE COMPRESSOR EFFICIENCY...



with New and Improved TEXACO CAPELLA OIL (Waxfree)

Whether you're compressing in the normal refrigerating range, or want temperatures down to minus 100°F., your best bet for clean, efficient compressor performance and freedom from wax precipitation is *Texaco Capella Oil (Waxfree)*.

In actual service as well as in tests against leading competitive oils, *Texaco Capella Oil (Waxfree)* has established its outstandingly low haze and floc temperatures . . . its extreme stability, purity and resistance to oxidation. In addition, *Texaco Capella Oil (Waxfree)* is moisture-free, will not react with refrigerants.

There is a complete line of *Texaco Capella Oils (Waxfree)*. Whatever your temperatures, operating conditions or refrigerants, there is a *Texaco Capella Oil (Waxfree)* to step up efficiency and assure you more tonnage per dollar. Available in refinery-sealed 55-gallon drums; 5-gallon, 1-gallon and 1-quart containers.

Let a Texaco Lubrication Engineer help you select the proper one for your compressors. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO Capella Oils (Waxfree)

FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS

Faithfully yours TEXACO 50 *for Fifty Years*

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

ICE AND REFRIGERATION, Vol. 122, No. 6. Published monthly at 433 N. Waller Ave., Chicago, Ill., U.S.A., by Nickerson & Collins Co. Yearly subscription in the U. S., $3.00 per year; other countries, $4.00. Single copies, 35 cents. Copyrighted 1952 by Nickerson & Collins Co. Entered as second-class matter August 8, 1891, Chicago, Ill., under the Act of March 3, 1879. Additional entry at Beloit, Wisc.

new "X-TYPE" doors

MOST REVOLUTIONARY ADVANCEMENT IN THE COLD STORAGE DOOR INDUSTRY!

Advantages of "Butcher Boy" NEW "X-TYPE" Construction:

1. "X-Type" Steel Diagonal Bracing is the basic principal of RIGIDITY.
2. Guarantees MAXIMUM INSULATION FILL inside of door.
3. The only POSITIVE method to prevent door sagging.
4. Allows REVERSAL OF DOOR SWING if necessary.

The Strongest and Most Durable Cold Storage Door Built!

No other cold storage door company can offer the exclusive features of "X-Type" Steel Bracing and "Interlok" No-Sag door construction . . . Specify these features . . . They cost no more.

Outside Corner Construction

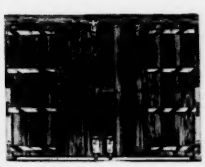
Inside Corner Construction

"INTERLOK" NO-SAG CORNER CONSTRUCTION *(Pat. Pend.)*

ALL BUTCHER BOY DOORS ARE BUILT "X-TYPE"

Plywood Door

Track Door



Double Door

Vestibule Door

Low Temp. Door

BUTCHER BOY COLD STORAGE DOOR CO.

170-180 N. SANGAMON ST. ★ CHICAGO 7, ILL. U. S. A.

Write Today for New Catalog

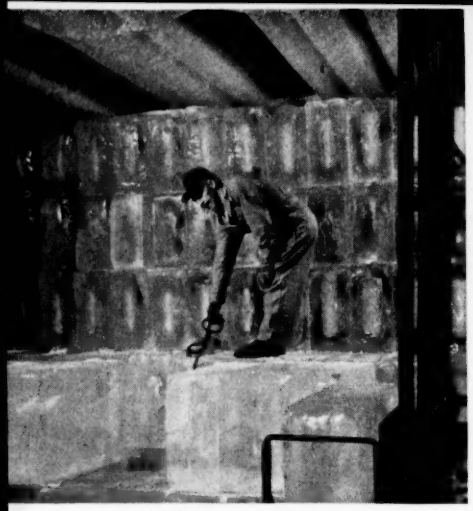
Butcher Boy Cold Storage Door Co.
170 N. Sangamon St., Chicago 7, Ill.

Please send me your new catalog on Butcher Boy "X-Type" doors

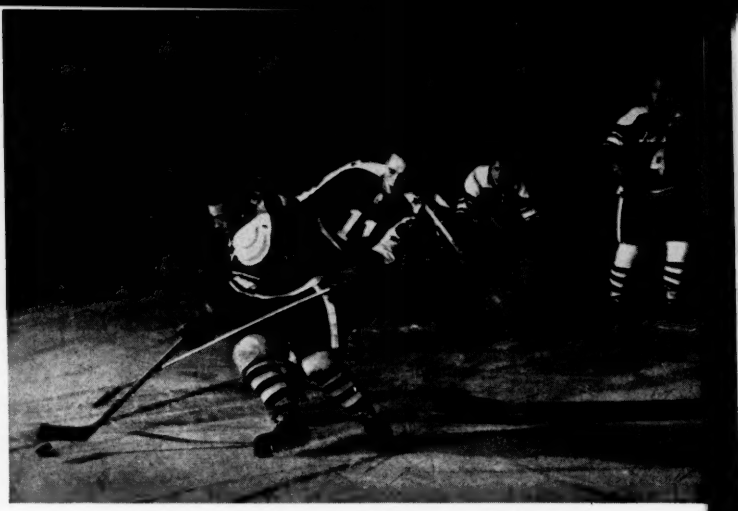
Name_____

Address_____

City_____ State_____



450 TONS OF ICE can be safely stored in this room. All of it is needed for concessions at Hershey Park and for domestic consumption. The supply is always dependable, thanks to Suniso.

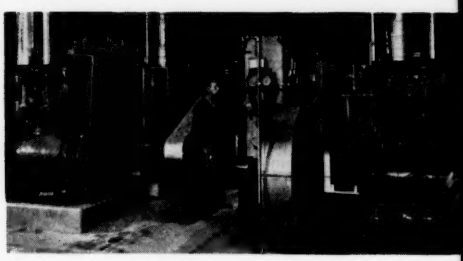


THE HERSHEY BEARS AVERT A SCORE. The ice for this sports arena has been supplied with the help of a Suniso Refrigeration Oil for about six years. With a previous oil, compressor breakdowns were a constant threat to the sports program.

COMPRESSOR EFFICIENCY BOOSTED 15% BY SUNISO

The refrigeration compressors which service the Hershey Sports Arena, home of the Hershey Bears, are part of a central system which also takes care of an ice plant, frozen food lockers and cold storage rooms. About six years ago, the compressors were losing efficiency because of an inadequate refrigeration oil. It formed excessive lacquer and carbon deposits, which clogged the lines and made frequent overhauls necessary.

To solve the problem, management called in a Sun representative, and on his advice switched to a Suniso Refrigeration Oil. Suniso's natural detergency immediately began attacking the deposits throughout the system, carrying the sludge to traps and filters. Soon the system was entirely clean. Since then—over six years ago—the compressors have run at an overall added efficiency of 15 percent, and have always been equal to the heavy requirements made of them.



TEMPERATURES FROM −50F to +50F are supplied by these Frick ammonia compressors. They circulate brine through coils in the ice plant and under the arena floor, and ammonia through coils in the cooling and quick-freezing rooms. One grade of Suniso lubricates all of these compressors. Overall efficiency has been 15 percent better ever since its adoption.

75 TONS OF PEACHES AND APPLES are stored at 31F to 35F. Nearby are cold rooms protecting potatoes, cheese and raisins at 38F to 40F, powdered milk for chocolate at 40F; a quick-freeze held at −40F to −50F; frozen food storage at −6F to −8F. These rooms are all serviced by the same central system which handles the arena and ice plant.

SUN OIL COMPANY, Dept. IR-6, Philadelphia 3, Pa.

If faulty lubrication is possibly costing you compressor efficiency, use this coupon to get: ☐ the services of a Sun representative, ☐ a free copy of the technical bulletin "Lubrication of Refrigeration and Air Conditioning Equipment."

Name_____

Title_____

Company_____

Street_____

City_____ Zone_____ State_____

SUNISO REFRIGERATION OILS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO & MONTREAL

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ICE and Refrigeration

VOLUME 122 NUMBER 6

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June, 1952

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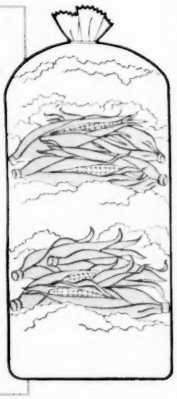
A *New* MARKET FOR THE ICE INDUSTRY...

GROWERS OF SWEET CORN

USE 20 LBS. OF ICE PER BAG TO SHIP CORN TO MARKET IN NEW ICED SWEET CORN BAG

Easy wire fastening (or may be stapled) • Three layers of sturdy, wet-strength kraft paper • Dependable wet-strength protection against breakages • Attractive printing on front • Big capacity: 20 lbs. of ice, five dozen ears in 20" x 39" x 7" bag • Comes printed in green, as illustrated • Ice in bags is reusable. For example, for counter refrigeration • Perforations provide drainage for melted ice water • "Satchel bottom" construction for convenient standing and filling • Guaranteed to cut deterioration and waste

TWO LAYERS OF CORN are inserted in the bag between three layers of ice. The ice is mixed, fine and coarse, for quick cooling and longer-lasting refrigeration.



SUCCESSFULLY market-tested last year, the new Union Iced Sweet Corn Bag has proved its value to the produce industry in protecting the flavor, freshness and appearance of corn en route to market.

Growers of sweet corn represent an important new sales target for you. Potentially they are a market for over 200,000 tons of crushed ice annually.

Many growers already are familiar with the new Iced Sweet Corn Bag. Others rapidly are becoming acquainted with it through recommendation by government and farm agencies, as well as through Union Bag advertising.

You are a logical supplier not only of the ice needed for these bags—20 lbs. per sack—but also the bags themselves. Get in on the ground floor. Many companies already are sending in substantial orders for Iced Sweet Corn Bags, to be included in their regular Iced Bag cars.

UNION ICED SWEET CORN BAGS

UNION BAG & PAPER CORPORATION

WOOLWORTH BUILDING, NEW YORK 7, NEW YORK

MAIL COUPON FOR FREE SAMPLES

Union Bag & Paper Corporation
Woolworth Building, New York 7, N. Y.

Please send samples and more information about the new Iced Sweet Corn Bag and the sales opportunities it presents for crushed ice.

Name & Title_____

Company_____

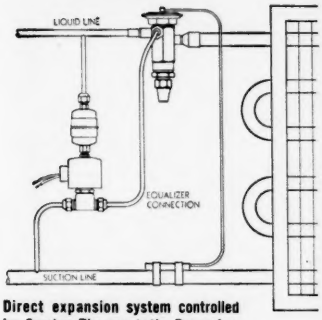
Address_____

City_____ State_____

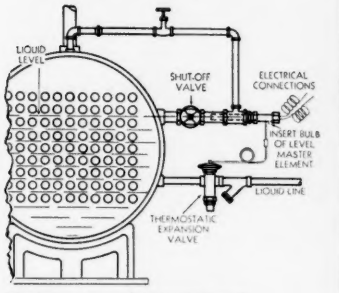
gives you

on ALL SYSTEMS

both DIRECT EXPANSION *and* FLOODED



Direct expansion system controlled by Sporlan Thermostatic Expansion Valve and 171 Solenoid Pilot Control.



Flooded system of horizontal shell and tube type with Sporlan Level-Master Control.

On direct expansion systems . . . from comfort cooling to minus 100° F. engineers everywhere agree that for Peak Performance, it's Sporlan Right Down the Line. Why? . . . because only Sporlan offers you these time tested features.

Direct acting Thermostatic Expansion Valves from ½ to 100 tons Freon-12.

Sporlan Pioneered Selective Charges.

- **C** Charge for suction temperatures above zero
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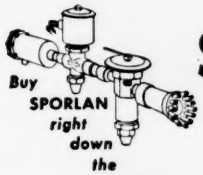
- **X** Charge for extremely low temperatures
- **G** Charge with Flow-Master Element reduces hunting on comfort cooling systems.

On flooded systems . . . Sporlan has answered engineers' demands for Peak Performance with the Sporlan Level-Master Control. It consists of a conventional Thermostatic Expansion Valve equipped with the new Level-Master Element, which combines the liquid level control and the expansion device into one unit. The Level-Master Control provides a modulated flow and maintains practically a static liquid level in the low side. If the liquid level drops, a heater element in the insert bulb acts as an artificial superheat increasing the pressure in the thermostatic element, thereby opening the valve. If the liquid level rises, its refrigerating effect on the insert bulb overcomes the heater and the valve throttles.

On your next direct expansion or flooded job . . .
Be Sure with Sporlan!



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EXPORT DEPARTMENT
89 BROAD STREET • NEW YORK 4, N. Y.

the *Trend* is to SIZED ICE.. Tube-Ice

And Here's Why...

1 Only 3.6 KWH is required to make 100 pounds of Tube-Ice with the Vogt 2,000 Pound Package Unit . . . a figure unmatched by any other sized ice machine in the market.

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4 The 2,000 Pound Tube-Ice Unit provides that needed ***extra capacity*** to meet peak loads in hotels, restaurants and institutions which use up to 1,000 pounds of sized ice daily.

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Vogt Automatic TUBE-ICE MACHINE

2,000 Pound Package Unit

At the flick of a switch

CRUSHED ICE or CYLINDER ICE

The Finest ICE MAKING UNIT EVER MADE

How to make better ice . . . FASTER!

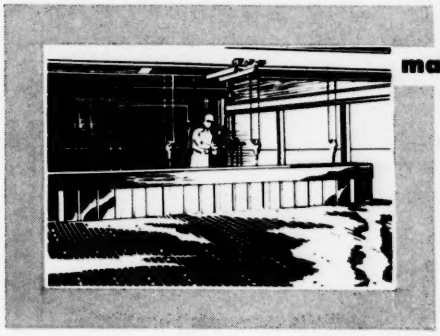
templets

the little green tablets that make ice clearer!

With TEMPLETS, the original ice-tempering tablets, you can make more ice during the peak summer months in the same number of cans. TEMPLETS reduce cracking and breaking in the cakes, so you can freeze raw water at lower brine tank temperatures, use the cans more often and make more ice!

Besides making your ice tougher and reducing its tendency to break or crack during cutting or scoring, TEMPLETS also give you a clearer cake. White butts, heavy cores and the cloudy veil that your customers don't like can be completely or partially eliminated by using TEMPLETS. They clear your ice of imperfections caused by hard raw water. And the TEMPLETS treatment costs about 1c a ton!

TEMPLETS are the famous green tablets that have been in use for years in ice plants all over the world. Two or three TEMPLETS dissolved in a can, improve the quality of your ice and leave no taste, no odor, no color. Try the TEMPLETS treatment today — at our expense!



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1. Send the coupon below for your free sample of TEMPLETS.
2. Dissolve two or three TEMPLETS in each can of raw water in alternate rows of cans.
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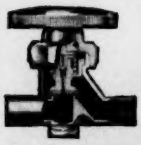

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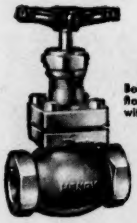
With balanced-action



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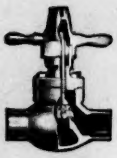
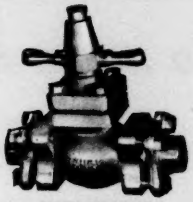
Bolted Bonnet — screw or flanged connections. Also with screwed bonnet, sizes 1" and under



WING CAP VALVE
Non-ferrous



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Semi-steel—with companion flanges and adapters

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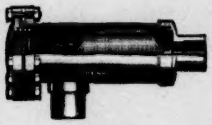
yet no premium for..
the extra advan... found in
Henry products
or for the extra satisfac... that follows their use



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Angle type with patented distortion-proof flange

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Brass plated. Welded steel construction with forged brass connections. Size ½" O. D. S. through 4⅛" O. D. S.

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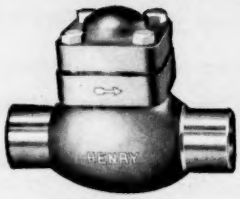
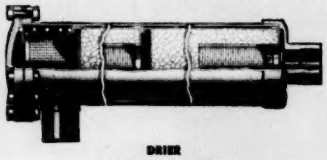
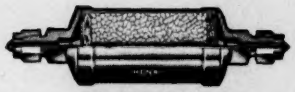
Valves are backseating—diaphragms may be inspected or replaced without loss of liquid. Conforms with all safety code requirements.



CHECK VALVE
Piston Type For Freon. Sizes ⅜" through 4⅛" O.D.S.



DRIER
Cartridge type with dispersion tube



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2 cubic inches more than established practice. Forged brass end caps.

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No. 100 Packless and packed valves, strainers, driers, ammonia valves, check valves, relief valves, three-way valves, scale traps, liquid gauge sets, flange unions, nut unions and accessories for air conditioning and refrigeration and industrial uses.

No. 70 Drop forged and cold rolled steel fittings.

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Large capacity—fast positive relief and reseating action. Very small differential between opening and closing pressures.

STRAIGHT-THROUGH RELIEF VALVE
Large capacity—All Brass Construction. Sizes ¼" M.P.T. through 1" F.P.T.

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In The Spotlight

REFRIGERATED warehousemen meeting in New Orleans for their annual convention participated in panel discussions on salient problems confronting the industry, including practical operating details and cooperation with the government. Report of this meeting starts on page 18. The American Warehousemen's Association, report starting on page 15, was geared to the vital defense program on the business side and to the New Orleans locale on the social side. There was a record attendance. The Refrigeration Research Foundation held its annual meeting preceding the opening of the A.W.A. convention with an unusual attendance and interest. Report starts on page 25.

THE STORAGE Advisory Committee of the National Association of Refrigerated Warehouses has reported on its accomplishments to date, with list of projects under way and recommendations. See page 29.

A PRODUCE TERMINAL for handling fresh fruits and vegetables, covering more than 27 acres, with more than 60,000 square feet occupied by the building is now in operation in San Antonio, Texas. The plant is completely described and illustrated on page 31.

A WAREHOUSE for storage of almonds has been constructed at Sacramento, Calif. by the California Almond Growers Exchange. For description and pictures see page 34.

COLD STORAGE SPACE utilization on April 30 was 59 percent for coolers and 76 percent for freezers. This was slightly above average for coolers and 8 points above average for freezers. More complete details are in the article summarizing the monthly report on page 35.

COVER. Engine room of new warehouse built at Sacramento, Calif. by California Almond Growers Exchange for storage of shelled almonds. Picture shows compressors, motors, switch panel, defrost exchanger, brine cooler and liquid ammonia receiver tank. Story on page 34.

HOW TO KEEP power costs in an industrial plant at a minimum was discussed in a paper by a power company representative at the last annual convention of the N.A.P.R.E. This paper which embodies some practical suggestions on the subject starts on page 37.

MERCHANDISING possibilities in the ice industry are reviewed and discussed in a recent bulletin issued by the National Association of Ice Industries. See page 45.

LITTLE ICE MAKERS are being pushed by a vigorous merchandising campaign but their manufacturers recognize the ice industry as serious competition. How to capitalize on their weaknesses is told in the article on page 46.

FROZEN FRUIT and vegetable production reached a record total of 1,185.9 million pounds in 1951, twelve percent greater than the previous all-time high in 1950. Frozen fruits declined 12 percent but frozen vegetables increased 31 percent. Detailed figures are given on page 54.

LETTERS

Likes Coverage of TRRF

I like very much the coverage of T.R.R.F. affairs in ICE AND REFRIGERATION, for April; as always I & R is a loyal and persuasive supporter. Many thanks

"Dutch" Diehl,
Director, The Refrigeration
Research Foundation

60 Years Ago

From the June, 1892 issue
of ICE AND REFRIGERATION

THE ICE MACHINE of the future, according to a special article by Thomas Rose, will use ammonia as a refrigerant but will operate at very low pressure with the fuel cost only a fraction of the current cost of fuel. The machine Mr. Rose describes is a combination of absorption and compression systems. Charged with a 40 percent solution of ammonia in water, a compressor would draw ammonia gas from solution which would be chilled in the process and then pass through the refrigerating coils. Mr. Rose gave projected operating data on the new machine and baits other engineers and manufacturers in rather flowery but contentious language to debate the issues he brings up in comparison with other machines.

A "DOMESTIPOID" introduced by A. R. Ballentine, an old pioneer in mechanical refrigeration was interesting Cleveland capitalists. Although characterizing the description of this device as "superbly indefinite", it is presented for what it might be worth. The motor of the new device, it was said, could be attached to any water pipe and force a pressure of ammoniacal vapor through the pipes of the refrigerator, producing a temperature as low as 20 F . . . As there is no ice used there is a large gain in space and the refrigerator can be kept perfectly clean and the air pure. The saving in cost is astonishing. For example a refrigerator that costs 80 cents a day for ice, the one with the motor attachment can be run at an expense of not over 10 cents daily, according to a news report.

NEW COLD STORAGE plants were being constructed in various cities, in connection with ice plants and as separate warehouses. Prefacing a list of these new constructions the comment is made that the time must soon come when every good country town of 5000 people and upwards will have its cold storage houses for the preservation of its perishable food supplies and when one thinks of the effects of a "wet spell" and accompanying bad roads in the country and how these operate to cut off temporarily from country towns their supplies of butter, eggs, and other farm produce, the wonder is that such storehouses are as few as they now are.

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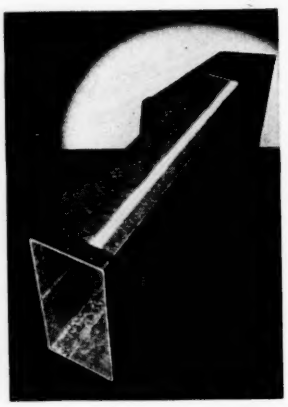

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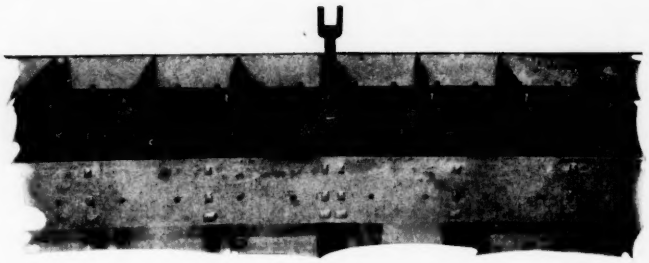

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American Warehousemen's Association

Sixty-first annual convention held at New Orleans with record registration and high interest. Business program geared to continuation of vital defense program.

A RECORD registration and attendance greeted the 61st annual convention of the American Warehousemen's Association at New Orleans May 4-8, 1952. The actual registration figure was 724 but a large number present who were not registered brought the total to well over 800, a record high for A. W. A. conventions. This was well reflected in the attendance and interest shown at the convention sessions, each of which had large and attentive audiences.

A.W.A. Officers for 1952

President, J. L. Gagini, Omaha, Nebr.

Vice-president, Wilfred S. Long, St. Louis, Mo.

Treasurer, Wm. A. Morse, Minneapolis, Minn.

Secretary, Wm. Dalton, Washington, D. C.

I. L. Gagini, Omaha, Nebr.
President A.W.A.

It was a convention of few speeches and formal papers, the programs of both the Merchandise Section and the National Association of Refrigerated Warehouses being made up largely of panel discussions of problems and procedures of direct interest to members of the industry. This was a welcome innovation as shown by interest and participation from the convention floor.

The convention program was geared to the vital defense program on the business side and to the New Orleans locale on the social side. While the preparedness issue was evident in some panel discussions and individual comments, it was not dominant, the industry following a trend of assuming watchful waiting rather than active preparation, although it was made clearly evident that the industry is fully ready to assume its responsibilities and obligations in event of a national emergency.

The usual round of entertainments were offered: Sunday evening there was a "Sazerac" party in the hotel, compliments of the New Orleans warehousemen; Monday evening the annual A. W. A. Family Party was a boat trip on the riverboat steamer "President," with buffet supper; Tuesday evening a hospitality hour in the Grand Ballroom; Wednesday evening the President's reception and annual banquet and floor show, followed by dancing; and the final farewell luncheon Thursday noon, preceding the closing A. W. A. session.

For the ladies there were walking tours of the historic Vieux Carre, luncheon and style show, bus tour of New Orleans and a "charm" school.

One of the side issues was a "straw ballot" on presidential candidates. The results, announced at the final session were: Taft 218; Eisenhower 148; Russell 35; Kefauver 10.

Following the convention, a ten-day tour of Mexico had been arranged in cooperation with the association. A group of about fifteen went on this tour and reported a very enjoyable trip.

First Session

The convention was opened Monday morning by J. Leo Cooke, A. W. A. president. Members were welcomed by Hon. de Lesseps Morrison, Mayor of New Orleans, who called attention to the city's industrial progress, particularly the port facilities and progress, as well as its facilities for entertaining visitors.

J. Weil, Jr., chairman of the New Orleans convention committee also welcomed the members of the convention and said it was the committee's earnest desire that they all enjoy their visit to New Orleans.

James K. Knudson, administrator, Defense Transport Administration, presented a prepared address on "Sheltering America's Production." Mr. Knudson spoke in part as follows:

I. Leo Cooke, Jersey City, N. J.
Past President A.W.A.

Such things as the adoption of mechanical equipment, the use of pallets, which came into being largely during World War II, and the trend to one story buildings, have effected drastic changes in your industry. Today we observe the efficient and rapid movement of all kinds of freight to and from the loading dock by the use of this equipment and have visual evidence of the progress that has been made.

The general policy and basic philosophy of DTA with reference to transportation and storage is an earnest desire to carry out the necessary defense programs with a minimum of interference with private

managerial prerogatives, in the belief that the desired results can best be achieved through such a policy. The experience in World War II proved conclusively that private management of our nation's storage system is qualified to handle its problems under emergency conditions. DTA will, therefore, continue to assist on a standby basis only. I believe, in all confidence, that your industry will be able to meet and successfully surmount the obstacles and difficulties we are all now encountering and the more serious ones that may confront us during these trying times.

On the other hand, with international conditions as they are, we would be derelict in carrying out our responsibilities if we were not at this very moment giving serious thought to even more serious problems that may be anticipated in the future. Your industry is one cog in the complex economic organization of this country, all of which must mesh together, particularly in times of emergency; and there must be a coordinated approach to accomplish the best results. While we hope and pray that the present crisis will improve and not worsen, there could be no more tragic mistake than to proceed on the happy assumption that it will soon be over. There are few greater faults than wishful thinking and certainly our plans must be based on the theory that anything can and may happen.

New Refrigerated Space

When it became necessary after the Korean incident for this country to embark upon a gigantic production program, it became clear that there would need to be an expansion of storage facilities, both in private industry and in government controlled space. The storage of strategic materials and the need for increased defense inventories play an important part in the requirements for such facilities. There are bound to be different needs in the various production areas due to these unusual circumstances. Furthermore, the changing international situation creates uncertainties as to the ultimate points of need for the stored commodities. This means that storage facilities in certain predictable areas of the country may not effectively serve the required purpose and that other areas may develop new and unexpected needs.

In our approach to the storage problem, it is obvious that the two fundamental questions are, "How much warehousing space do we need?" and, "How much space do we have?" To answer the first question required an analysis of the requirements of the several government agencies that are substantial users of storage services and a careful consideration of the needs of the essential civilian economy. Toward meeting the first objective, we have established the Interagency Storage Coordination Committee as a method of achieving effective coordination and utilization of the available facilities.

This committee is composed of representatives from the Defense Transport Administration, the Department of Defense, the Department of Agriculture, General Services Administration, and the Reconstruction Finance Corporation. It provides us with the opportunity of periodically reviewing the requirements of these agencies for storage services and establishes a mechanism for determining the best method of overcoming deficiencies or, if necessary, establishing allocation procedures. In coordinating these various requirements and being able to consider at one time the over-all need for storage services, much good can be and is being accomplished.

W. A. Morse, Minneapolis, Minn.
Treasurer A.W.A.

The second problem, that of attempting to determine how much space we have, presented more difficulties than we first believed, particularly as it respects the merchandise group. A new survey was conducted, requesting sufficient information from the warehouse industry to obtain a reasonably accurate appraisal. Generally speaking, the response was good. We are hopeful it will produce enlightening and practical results.

Modern freezing and storage facilities are now recognized as a necessity in our present day economy. As you know, the Department of Agriculture has expanded its biennial survey, at our request, to include certain additional questions and agreed to make these results available to us. We believe that this joint survey will be helpful to all concerned. In addition, we have under way a rather complete study of your industry in an attempt to forecast requirements for a number of years in advance. I will not attempt to go into detail here, but we believe that the final conclusions will confirm the optimism so many of you feel respecting the future of refrigerated warehousing.

In our approach to the problem of increasing the storage capacity to meet the anticipated requirements, it was concluded that expansion of capacity should be accomplished on the basis of overcoming regional or area shortages rather than on a nationwide basis.

Our primary findings in regard to to the need for expansion of refrigerated facilities show that perishable foods are one of the major requirements of the military as well as the civilian economy, and the proper storage thereof is recognized as essential to the defense program. Cooler space presents no real problem and it is anticipated that the available space is sufficient to accommodate all anticipated requirements. Available freezer space, however, is in short supply in certain areas and, with a nationwide year-end occupancy rate of approximately 83 percent, the long-range occupancy trend appears to be still upward.

Increase in Frozen Foods

During the last ten years there has been a tremendous growth in the production of frozen fruits, vegetables, juices, meats and poultry. Development of new production areas, improvement in transportation facilities for freezer items, increasing purchases for military personnel and constant research have all combined to create an ever-increasing demand for the storage of perishable items.

The suppliers to the military must use freezer storage facilities in order to meet procurement schedules. To accumulate the required perishable commodities and provide for economic distribution to consuming points, freezer storage space must be made available to packers, processors and suppliers prior to shipping dates specified under military contracts.

In the encouragement of your industry to meet the needs for warehousing facilities, we have four basic programs.

First is the expansion loans program under Section 302 of the Production Act. There have been a very small number of such loans considered for warehousing construction to date, and very frankly, it is difficult to meet the established criteria for such purposes.

The second and most frequently used incentive program is by accelerated tax amortization under certificates of necessity. DTA considered 235 applications covering warehousing facilities, of which 141 have been approved to the extent of approximately $29,800,000 and 94 cases have been denied. These figures cover all types of warehousing facilities within DTA's area of responsibility.

The third is the approval of con-

struction applications and the allocation of controlled materials for your building projects. Under National Production Authority Delegation No. 14, DTA was given the authority to approve applications for permits to commence construction and for the allotment of the required controlled materials. In general, construction within our sphere of activity will be carefully considered and permits granted for the construction of essential facilities in those areas where shortages have developed.

The fourth item respects credit controls. DTA was one of the first agencies to urge the Federal Reserve Board to amend its Regulation X to permit exceptions to the 50 percent collateral value requirement on the financing of construction of certain types of facilities. While this exception has been used sparingly by DTA, the exemption provision is available for warehouse projects.

Togetherness

Under the title of "Togetherness" President Cooke called attention to the necessity of warehousemen working together to advance the welfare of the entire warehousing business. It is interesting, he said, that great advancements of our system of free enterprise have come about from efforts on the part of government to preserve our way of life by building our military strength and controlling our economy to ward off inflation, the result of which has been that to save the world from communism we have become cousins of socialism.

In all our national defense efforts, our systems of price and wage controls must not be permitted to get out of hand or be mis-managed. The government should never lose sight of the fact that this system of price and wage controls is designed to stabilize our economy and stem the spiral of inflation, and it is most important to recognize that these controls are essentially repugnant to our system of free enterprise. We should all constantly bear in mind, and the government should realize, that these controls are purely a temporary feature, if they are long continued, if they become permanent, if they become a regular pattern of our economy, the freedom of market which is the heart of our economic system will have been destroyed and this, of course, would mean the collapse of our system of production and distribution.

In this hotel this association held its 44th annual convention in February 1935. Among the many problems facing the industry at that time was operation under the NRA and seventeen years later, today, our major problem is that we are operating under the OPS, WSB and the SSB. Wouldn't you think we would have succeeded by now in eliminating the alphabet from our business? All three of these latter agencies are segments of the Defense Production Act of 1950. When these agencies were created, we were not invited to help interpret the law or write the regulations as they pertain to our industry. This predicament is partly our fault. If we had made our voices heard in Washington, and if the representatives of the government had listened, we would have achieved a more workable and fairer set of controls.

Another omission on our part in not advancing the welfare of the warehousing industry is the standard contract terms and conditions under which most of us do business. Incredible as it may seem we are operating under the standard contract terms and conditions which were adopted by representatives of shippers, bankers, railway men, and warehousemen in 1926. I am convinced that law decisions and legislation have outmoded the so-called standard contract terms and conditions for our protection and for service to our customers and that these standard contract terms and conditions must be revised.

There was organized an association in 1926, approved by this group and known as the "Council of Warehousemen's Association" for the purpose of considering and acting upon all matters of common interest to the various branches of the industry. It is my recommendation that this council be revitalized. It should be made up in membership of the merchandise division, National Association of Refrigerated Warehouses, National Furniture Warehousemen's Association, Independent Movers and Warehousemen's Association, Mayflower Warehouse Association, National Cotton Compress and Cotton Warehousemen's Association, and the American Steel Warehousemen's Association, with an established policy to keep a watchful eye on all legislation and to alert member associations to matters affecting the welfare of the warehousing business throughout the United States.

America's Future

An address by James D. Arrington, editor Collins News-Commercial, Collins, Miss., delighted the convention with its caustic and humorous references to the current political and economic conditions.

Mr. Arrington pointed out how necessary it is for all citizens to do their part to create and support the kind of business and economic life they want this country to have. We have learned through bitter experience, he said, that the government cannot plan and control the lives of people and still leave them happy and contented. There are visible and invisible forces which are slowly but surely destroying our ideals and institutions of government.

The only way a people can receive, maintain and enjoy a higher standard of living is an expanding economy based upon hard work, competition and efficient government. This will be brought about quicker and will be far more permanent by following the legislation handed down from Mount Sinai rather than that handed down from Washington, he concluded.

Report of Secretary

A brief report was presented by Wm. Dalton, general secretary, summarizing a mimeographed report which had been distributed. This report called attention to the convention program which he said was geared to the vital defense program on the business side and to the New Orleans locale on the social side. Among association activities during the year had been publication of the A. W. A. Yearbook, continued distribution of the A. W. A. banking brochure, contacts with government, business and organization officials, supplying information to correspondents.

Final Session

The final session was held Thursday afternoon immediately following the farewell luncheon, which was attended by some 500 members and guests, the largest number ever attending similar events.

An interesting and forceful address was presented by Clayton Rand, editor of The Dixie Guide, Gulfport, Miss. His talk was a humorous yet serious commentary on the politico-economic situation. The people are confused, he said, and this is understandable when we recognized that the country itself lacks well informed leadership. He criticized the present tendency of leaning on the government and the government itself for thinking it has the duty of saving the world.

During these times, he said, all citizens must ask themselves what they are doing to improve the situation in which government encroaches more and more upon the lives of the people. That, he said, is the magic formula that will pull us out of the situation we are in. But, there is definite evidence, he thinks of a movement to the right in political thinking in this country and in England, Australia, and other countries.

Farewell Report

In a brief farewell report, Mr. Cooke, retiring as president, said he was pleased to join the distinguished

(Continued on page 56)

Annual Meeting of Refrigerated Warehousemen Headlined by Panel Discussions

TO bring the convention program closer to the needs of individual warehousemen, and to get expressions of opinion as well as facts from the members, the sessions of the National Association of Refrigerated Warehouses, except for the usual convention and association business and reports, were arranged on a panel-discussion basis with a leader and panel members selected from

A. B. Efroymson, Cleveland, Ohio
President, National Association Refrigerated Warehouses

industry members and government representatives. These discussions were packed with practical industry information.

These panel discussions spread through six sessions, covered prices, pay and priorities; refrigerated storage of candy; control of humidity in storage rooms and condensation of commodities; new commodities for refrigerated storage; customer services; insurance and safety construction and modernization; materials handling in multi-story plants; lien rights of warehousemen; the military contract; labor-management problems; banking and warehousing.

This panel discussion idea was inaugurated by the Executive Committee because it was felt that in view of present-day conditions and the question of how refrigerated warehousemen can do their part in the National economy in spite of increasing and hindering government controls such a type of program was needed to obtain the viewpoints of members in all parts of the country. The emphasis in all the discussions was on practical operating problems and top military personnel were selected to give practical answers as to what the industry might expect during the coming year.

N.A.R.W. Officers for 1952

President, A. B. Efroymson, Cleveland, Ohio
Vice-president, R. M. Conner, Chicago, Ill.
Treasurer, Chas. B. Hart, Tacoma, Wash.
Executive vice-president, Wm. Dalton, Washington, D. C.
Secretary, Joseph Colquitt, Washington, D. C.

Executive Committee: The officers and J. P. Johnson, Washington, D. C.; H. C. Emerson, Bridgeton, N. J.; W. C. Hudlow, Jr., Chattanooga, Tenn.; T. E. McCrary, Memphis, Tenn.; F. D. Newell, Jr., Minneapolis, Minn.; W. W. Wilson, Jr., Brooklyn, N. Y.; John K. Dozier, Houston, Texas, J. W. Wilkerson, Kansas City, Mo.; M. W. Young, San Francisco, Calif.; E. M. Neylon, St. Louis.

Industrial Films

Another innovation was the presentation at the first, second, fourth and sixth sessions of short industrial films. These were presented by the U. S. Chamber of Commerce on advertising and free enterprise, the Chesapeake & Ohio Railroad on The White House at Washington; the Meat Industry by The American Meat Institute: the CIO on the Textile Workers Union. Although the audiences for these films were somewhat in the sparse side, those who attended added to their information on the subjects covered.

Following the custom established some years ago a "First Timers" luncheon was held Monday noon, complimentary for new members attending their first convention and for "old timers" on a Dutch treat basis. A gratifying number of old timers were there to welcome the new members. Introduced as special guests were C. L. Snavley, Lancaster, Pa., president of the National Frozen Food Packers Association and Crawford Johnson, Montreal, Canada, president of The Canadian Warehousemen's Association.

The Government and Business —Association Responsibility

After the convention had been opened by President J. P. Johnson, greetings were extended by J. Leo Cooke, president of A. W. A. and A. B. Efroymson, vice president, presented Mr. Johnson with a gavel made from a timber from the White House.

Jerry P. Johnson, Washington, D.C.
Past President, National Association Refrigerated Warehouses

Mr. Johnson then presented his annual address in which he reviewed briefly the association accomplishments of last year, pointed out the dangers of growing governmental power in this country and then elaborated on the responsibilities of association membership.

Among the more important association work during the year, he listed increase of dues to maintain normal activities of the Washington office, appointment of standing committees to cover all general phases

of the organization and special committees to take care of particular activities, and legislation.

Concerning legislative work, he said there are many dangers in the mass of legislation considered by both National and state governments. The trend toward socialism, with its equally dangerous contributing factors of higher and higher taxes is foremost; the desire for more and greater control by government bureaucrats; the wasteful spending and the gross inefficiences of government with its octopus of bureaus, commissions, departments, etc., running a close second. All of these make it more necessary than ever to be constantly on the alert to detect and recognize the danger signals in proposed new legislation. For instance, he referred to fifteen years ago and asked if at that time any of them would have believed:

R. M. Connor, Chicago, Ill.
Vice-President, National Association Refrigerated Warehouses

That a clause in the federal constitution granting power to the federal government to control commerce between the states would be stretched to cover most forms of local business, window washers, janitors, elevator operators, etc.

That the total number of civilian government employees would reach more than two and one-half million persons with an annual payroll of $9.9 billion; and that all civilians employed by governmental agencies of all kinds would amount to one out of nine gainfully employed persons in the United States.

That food would no longer be the number one item in the American family budget, but would be supplanted by taxes, which last year were $57.5 billion with the food bill only taking $52.5 billion.

That one administration in the course of a few years could spend more of the taxpayer's money than was spent by all previous administrations, together, or that the public debt would exceed $258 billion, or nearly $7,500 for each family in the United States.

Yet, all of these things and many, many more just as serious and just as far reaching in their field have come to pass.

From observation of the many bills introduced in the Congress pertaining to social security, unemployment insurance, health insurance, and old age pensions, one is inclined to the belief that the many activities of the federal government in the field of social security may be getting entirely out of hand, and suggests the possible thought that a thoroughgoing study and reappraisal should be made. The complete legislative report was distributed in mimeographed form.

C. B. Hart, Seattle, Wash.
Treasurer, National Association Refrigerated Warehouses

Turning to more direct association problems, Mr. Johnson said one big fault, common to all associations is apathy on the part of the members. Without an intelligent interest on the part of the membership in all matters affecting the industry as a whole, he declared, it is obvious that recommendations and suggestions of the executive committee and of the standing committees fall on barren ground and lose much of their value. Without taking time to think the recommendations and suggestions through and evaluate them, all too many immediately substitute their own individual ideas instead of whole-heartedly supporting the policies that have been determined and adopted by the executive committee.

We cannot preserve our system of private competitive enterprise by trying to solve our industry problems as individuals or by drifting with the tide with no effort on our part. The sound solution and achievement of goals take prompt and collective action through team work. We must plan and work — not drift — and by all means we should back up those who give of their time and effort in planning and working in our behalf. Our failure to do so may well be the difference between preserving or losing our system of private competitive enterprise and even our republican form of government.

The long term trends in government, he concluded, all point to increasing restrictions and restraints, not a relaxing of them. If we really desire to preserve the essential freedom of private competitive enterprise, therefore, we shall be compelled to devise and support measures that will permit us to retain them; and oppose militantly, if necessary, those measures which tend to expand them, in small or large measure, and to be effective it must be collective. Let us not shirk the task if we really desire to preserve our system of free competitive enterprise. We are shirking it when a small minority of our organization openly or hiddenly opposes our defined policy of action.

Panel Discussion
Prices, Pay and Priorities

The first panel discussion on prices, pay and priorities was directed by J. P. Johnson, participated in by H. K. Osgood, director Warehousing and Storage Division, Defense Transportation Administration; Col. Harold Boston, acting chief, Storage and Terminal Facilities, Office of Price Stabilization; and Harry Weiss, executive director Wage Stabilization Board.

Wm. Dalton, Washington, D.C.
Executive Vice-pres., National Association Refrigerated Warehouses

Outlining the subject, Mr. Osgood said the job of his department is to

determine the extent of refrigerated storage facilities available to fill government requirements and make allocations if necessary. Such allocations have not been considered necessary and he hoped they would not be. The amount of cooler space now is adequate to meet all requirements and it looks like no additional space will be needed. Regarding freezer space, if new construction continues as it has during the past year, this will provide the space needed for the immediate future. In places where it has been needed, new construction has been encouraged and 38 concerns have been so favored. A complete survey of refrigerated space is now being made and when that is completed, a much clearer picture will be available, he said.

Mr. Weiss' remarks were based entirely on the recent steel controversy, seeking to justify the recommendation of the Wage Stabilization Board and the subsequent action of the president in ordering the government to seize the steel mills.

Questions discussed by this panel included the procedure for filing for rate increases, applications for amortization, increased salaries for executives who assume added responsibilities, increased rates to bring profits up to previous years, and wage increases. Replying to a question as to availability of building materials for new construction, the answer was that available supplies are increasing and, barring a steel strike, prospects are favorable.

Association Business

Report of the treasurer presented by C. E. Simmon showed receipts slightly in excess of disbursements, with a cash balance of slightly more than a year ago.

A revision of the by-laws of the association providing for representation of each chapter on the executive committee was read by Joseph Colquitt, secretary.

The report of the nominating committee presented by S. C. Rogers, Chicago, recommended the election of the following as members of that committee, to serve for three years: John K. Dozier, Houston, Tex.; J. W. Wilkerson, Kansas City, Mo.; M. W. Young, San Francisco and E. M. Neylon, St. Louis.

Science Clinic

Following the custom of last year, one session was used for a discussion of the work of The Refrigeration Research Foundation. It was presented in the form of panel discussions on the refrigerated storage of candy; control of humidity in storage rooms and condensation of commodities; new commodities for refrigerated storage.

Leading these discussions were H. Farnsworth, president of T.R.R.F.; J. P. Johnson, president of N.A.R.W.; and H. C. Diehl, director of T.R.R.F.

Candy Storage

The panel on refrigerated storage of candy was made up of J. W. Wilkerson, Kansas City, A. L. O'Connor, St. Joseph, Mo.; E. L. Wintermann, St. Louis, Mo.; J. L. Gagini, Omaha; A. G. Janney, Baltimore, Md.; Dr. J. G. Woodroof, Georgia Experiment Station, Georgia.

This discussion touched on temperatures, humidities, packaging and materials handling. It was brought out that refrigeration is an almost complete panacea for most problems in storage of this product, offering protection for all kinds of candy during hot weather on maintenance, appearance, texture, firmness and insects, and greatly prolonging its life, although the ingredients largely determine the benefits. Some candies need storage and some do not. Some, like Easter eggs and marshmallows are injured by freezing while others can stand 0 F. or lower. The length of storage also determines the temperature required, lower temperatures being needed for several months' storage.

One member of the panel said they had used 45-48 F. very satisfactorily for six to nine months. Another reported forced air circulation at 55° F. for glazed fruits. Another reported use of forced air over 20 F. coils, and then over steam heated coils to reduce humidity. Another reported holding of glazed fruits at 30-35 F., but there was some condensation after leaving storage. When temperatures as low as 0 F. are used, it was recommended that the product be moved into cooler room at 30-35 F. before being taken out. Condensation, it was stated, can be reduced by proper packaging. Also, with low temperatures there is some crystallization of sugar. Another point in regard to temperature was that the product should be withdrawn during favorable weather, some candy men having learned that it is better to wait until outdoor temperatures and humidities are on the favorable side.

The point was made that candy manufacturers need to be informed that flimsy packaging will not stand materials handling procedure and that corrugated containers, for this purpose, are better than cardboard.

In connection with this discussion, a tribute was paid to The Refrigeration Research Foundation and the National Confectioners' Association for their research work which had opened up a big field for the storage of candy.

The panel on the control of humidity in storage rooms and condensation of commodities consisted of P. D. Burrill, Boston; Wm. J. Finnegan, consulting engineer, Los Angeles; R. H. Gubser, Los Angeles; Professor Carl Kayan, Columbia University, New York City; N. R. Bernz, New York City.

Opening the discussion Mr. Kayan described with blackboard illustrations the technical meaning of relative humidity which to a layman is simply the presence and amount of moisture in the air.

It was brought out that a general warehouse must provide a variety of temperatures and relative humidities to fit various products. Coil units for refrigeration, supplemented with heating units, are needed to provide both required temperatures and humidities. One house reported blowing air through calcium chloride to reduce the humidity. To increase the humidity, one method is to sprinkle the floor with water. Steam also can be used. In connection with commercial humidifiers, it was stated that any device that will evaporate water will increase humidity. Air currents will dessicate some foods and some it will not affect. Ceiling coils create heat by radiation and are more efficient than wall coils.

On the question of maintaining or changing to desired temperatures and humidities a well-constructed building and good equipment is needed. Vapor seal, for instance, should be provided both on the inside and outside of the walls. Relative humidity always varies and overall control is all that is possible. In general, a humidity of 50 percent is about right for frozen foods. In all cases where the right temperatures and humidities are maintained, satisfactory results have been reported.

New Commodities

Opening the discussion on new commodities for refrigerated storage, A. R. Current, Chicago, pointed out that this phase had been developed quite largely from the work of The Refrigeration Research Foundation and that the increased business resulting could be considered as a dividend on the financial support of The Foundation by refrigerated warehousemen. In addition to Mr. Current, the following panel members participated: L. M. Ashenbrenner, Toledo; W. J. Mills, Los Angeles; J. H. Kuehn, Milwaukee; R. L. Davis, Dallas.

Mr. Ashenbrenner reported on storage batteries. With the help of battery manufacturers, they have been conducting experiments at 0° and minus 10 F. One of the difficulties has been the testing of each individual battery which takes considerable time. An advantage is that it is a product other than food and in this respect opens up a new field of considerable possibilities. Another storage disadvantage is their weight which makes them hard to handle. For short storage of three to four months, a temperature of 38 F. is about right but for longer storage a temperature down to 0 F. is needed. Laboratory tests show that those stored came through in excellent condition.

Cheese Storage

Mr. Kuehn reported storage of cheese which reaches peak demand in November and December. By using storage it can be produced several months before that time thus leveling off the production period and tests have shown that storage improves its flavor. It is carried at 0 to minus 5 F. A similar experience was reported with cocoa. This product can be produced the year around and withdrawn from storage as needed.

Mr. Davis reported on the storage of onions. They had found temperature of 35 F. at 50 percent relative humidity about right. This product is stored when harvested and held for peak prices, about four to six months.

Mr. Mills reported on the storage of packaged fish, both cooked and uncooked. There is an increasing demand for this product and it seems to be developing into a sizable commodity for storage. He also reported on the storage of dehydrated alfalfa meal but it is difficult to clean up the room afterward. This, he suggested, would be a good product for an unused ice storage room.

Other products mentioned were powdered and liquid plastic, bakery goods, and turkeys. Powdered plastic is a cooler item, the texture and color of which must be preserved and this is accomplished in storage. Liquid plastic is unstable in low temperatures and needs storage in the winter at 32-34 F. It has an odor and must be well sealed. Bakery goods, particularly cookies and other items for the Christmas trade are held at about minus 5 F.

The Concentrate Story

A variation of the program was offered in a paper on the concentrate business by A. E. Stevens, vice-president of the Minute Maid Corporation, Plymouth, Fla. Mr. Stevens told an interesting story. Years ago, he said, orange producers found themselves in a period of over-production and to relieve this situation, the idea of advertising orange juice as a health drink was conceived. This caught the popular fancy to such an extent that it created under-production of oranges. A natural development was the production of frozen orange concentrate which has become so popular that 50 percent of the people regularly drink orange juice at some time during the day.

A panel discussion is under way. Upper center is H. C. Emerson, Bridgeton, N .J.; at left is Steuart C. Johnson, San Antonio; at right is J. P. Johnson, President N.A.R.W.

Forty Million Gallons

Concentrators will pack upwards of 40,000,000 gallons of frozen orange juice this year, he said, pointing out that Florida growers are raising the biggest orange crop in the history of the citrus industry. California's forthcoming crop is also expected to be of record proportions. Much of this concentrate will be placed in refrigerated storage and this increasing production will make it necessary to have more and more refrigerated storage space both at point of production and in-transit to northern markets.

Other frozen juices increasing in popularity include grapefruit, tangerine, orange-grapefruit blend, and grape juice. Mr. Stevens also anticipated that packers of frozen Hawaiian pineapple juice will have this product in distribution this summer for the first time.

In discussing the record pack of orange juice, he praised the refrigerated warehouse industry, for its part in handling frozen juices to consumers throughout the country. Without their cooperation, frozen juices will not be available in quantities sufficient to meet the sky-rocketing demand, he said.

Cooperation with Frozen Foods Industry

Following up a very successful luncheon meeting at the Frozen Foods Convention in Chicago last March, of refrigerated warehousemen with frozen food packers and distributors, a similar panel discussion was held at this convention, directed by H. C. Emerson, Bridgeton, N. J. Other members of the panel were: Stewart C. Johnson, San Antonio; J. W. Patterson, Jacksonville; W. J. Lamping, Detroit; W. C. Baker, Chicago, representing the warehousemen. Representing the frozen foods industry were: F. C. Filippone, New York City, manager of Warehousing, Snow Crop Marketers, Div. of Clinton Foods, Inc.; H. G. Hayman, Fruitland, Md.; Frozen Foods Div., John H. Dulany & Son; C. L. Snavely, Lancaster, Pa., president National Association of Frozen Food Packers.

The frozen foods representatives pointed out that the two industries depend upon each other and smoothness of operations will depend upon the degree of cooperation from each. The frozen foods industry they said, appreciates the efforts made to meet the needs of producers and distributors. Following these brief statements, the panel answered questions from the floor. Among the points brought out were the following:

Regarding dehydration claims, if established storage practice is followed the warehouse is not liable.

The question as to whether a charge should be made covering all frozen food services or whether separate charges should be made was partially answered by the fact that if new services should be added, increased rates could be established. Those who request new services should expect to pay for them. A packer's observation on this was that there are some services the warehouse should absorb if the established rate would seem to cover them. If, however, it means added expense, then it is a legitimate charge and the packer usually is willing to pay for it. A standard form was suggested, listing storage instructions and the services desired. Periodic inventories required from the warehouse, came in for some criticism and it was suggested that these could be reduced or eliminated.

Meeting Expanded Needs

Answering a question as to whether the warehousing industry will be able to take care of expanding frozen foods production, it was stated that freezer space also is expanding and as the demand for space increases adequate space will be provided.

In regard to freezing at point of production, a Northwestern warehouseman said all their space was not made full use of because of the packer's practice of shipping and storing in in-transit warehouses, chiefly in the middle-west.

Again the subject of delivery costs was raised. Warehousemen believe that this is a legitimate charge because it takes nine or more operations to move out and deliver an order. Any service that adds an element of cost should be paid for by the customer. The packers, searching for ways to lower costs have attempted to pass this to the warehouse whose rates are too low to absorb it. Warehousemen maintain that these costs should be paid by the one who requires the service.

At the conclusion of this discussion it was suggested that a joint committee be appointed representing the warehousemen and the packers to ascertain and formulate joint problems of the two industries, and report these at their respective annual conventions.

Panorama of Progress

The annual report of the executive vice-president of the association was presented in abbreviated mimeographed form, supplemented by a slide film, picturing the national office and personnel and its operations, accompanied by a recorded commentary.

The expanding defense program, the reported stated, has made increasing concentration necessary for keeping up with all the latest developments, government orders, regulations, interpretations, etc., affecting warehousing operations. Through "Quick Sheet," "Cold Facts" and special mailings, important developments are communicated promptly to members. In addition, the staff sees to it that the refrigerated warehousing story is continually being told to the right people in the right places.

This is especially important these days when so many government orders and regulations are being issued. It has resulted in an increasing awareness on the part of numerous defense officials of the vital role of the industry in the defense picture. This work requires constant contact with all branches of the government, but most important are DTA, DPA, OPS, WSB, NPA, USDA, to mention a few.

During the past months, more special articles and other favorable publicity have appeared in more trade and business magazines and in the daily press than ever before.

The Legislative committee has kept constant tabs on over 100 bills and resolutions either directly or indirectly affecting the industry. Where necessary, association representatives have appeared before congressional committees to aprove or object to certain bills.

Industry Studies

A safety and insurance study is being gotten underway by the Safety and Insurance committee.

The Warehouse Operations committee prepared the annual statistical questionnaire and gave valuable advice and counsel on several matters during the year.

Through efforts of Banking committee members, several meetings of bankers and warehousemen were held in various parts of the country during the year.

Other committees: Transportation, Public Information and Membership, have been at work during the year. The work of the latter produced a record-breaking 34 new members for N.A.R.W. since the last convention.

Customers and suppliers are virtually important to the Washington staff. For this reason, close attention is given to allied-industry contacts. Washington is a city of meetings and nearly every day of the week at least one staff member is representing the industry's interests at meetings of business groups, trade association executives, government officials, etc. In between times individual, personal contacts are maintained.

Other important activities include: The N.A.R.W. Group Insurance program has been approved by WSB for enrollment of new participants. Additional companies are again enrolling in this program.

The annual statistical survey has been completed, providing valuable three-year record of facts and figures on the industry.

The folder "Why We Eat Better" has been published. Thousands of copies have already been distributed.

Introduction of "N.A.R.W. Interviews" provides a method of getting important, timely information to members and has proved highly popular, as evidenced by the great number of requests for extra copies.

Cold Storage Advisory Committee

A report on the USDA Cold Storage Advisory Committee was presented by Arnold Hampson. This committee, Mr. Hampson explained, had been organized as a connecting link between the U. S. Department of Agriculture and the refrigerated warehousing industry, made up of warehouse members and industry associates.

Some fourteen projects now underway by the Agricultural Research Administration were listed and the following recommendations for future work were made: packaging for maintaining maximum efficiency of warehouse operation; further study of the causes and elimination of bone darkening in frozen poultry; further study in the shrinkage of meat in freezing and storage; further study of animal fat deterioration in products during storage; development of added data on air velocity in tunnel freezing. Regarding curtailment of federal expenditures, the committee said that proposed curtailment in agricultural research should be carefully studied and decided on the basis of whether such curtailment would endanger the investment already made and whether it would affect national defense.

Insurance and Safety

A panel discussion was held on the subject of Insurance and Safety, conducted by A. G. Janney, Baltimore, and participated in by: A. R. Carstensen, Sacramento; B. L. Bertel, Fargo; F. D. Newell, Jr., Minneapolis; Walter E. Bernd, Washington, D. C.; J. C. Irwin, Kansas City; F. L. Lockwood, Des Moines; A. G. Janney, Baltimore; R. N. Tuller, Springfield, Mass.; H. B. Lasky, Oswego, N. Y.

Opening the discussion, Mr. Janney called attention to the importance of safety work, particularly in the warehousing industry which does not have a favorable safety record and needs an adequate program of reducing accidents which, in turn, will reduce insurance costs.

Mr. Carstensen described his company's experiences. They employ 35 to 40 casual workers during peak periods each year. Their poor safety record, they had found, stemmed from poor employe relations. To improve this, they formed a social club

to meet one evening a month, the employees paying dues. At these meetings, talks are given on safety and some company business is presented. Twice a year a party is held, wives and husbands of employees being present.

The safety program is prepared and directed by a committee of top executives. This committee keeps accurate records and a constant study of how to reduce accidents and awards prizes to departments. As a result of four years' work, the company's insurance rate was reduced from 135 percent to 77 percent of the basic rate. In addition there was a big improvement in the morale and efficiency of the workers. Following his talk, Mr. Carstensen showed a slide film which, among other things, showed the "wrong" and "right" ways of handling bulky and heavy objects.

Other members of the panel contributed similar company experiences and it was emphasized that a safety program, aside from its humanitarian aspects, reduces time lost and lowers the insurance rate.

A question brought out the fact that the overall accident rate in warehousing in 1950 was one disabling injury to every sixteen employees, compared with a ratio of one to 34 in all manufacturing.

Emergency Planning Committee

A report on the work of the Emergency Planning Committee was presented by Vallee Appel. This committee was appointed two years ago and the time since then has been used to formulate a program. The warehousing industry was among the first to adopt a plan of action to be put into effect in event of an emergency. The committee offered it as reasonable and workable and one that would achieve its purpose. It has not been accepted by all government agencies, but in an emergency it can be used and the committee believes it will be used by the government agencies involved. When or if this or a similar plan is put into effect, he urged full cooperation in its administration and operation.

Construction and Modernization

A panel on construction and modernization was conducted by W. C. Hudlow, Jr., Chattanooga, Tenn., assisted by the following: K. F. Stepleton, Lafayette, Ind.; Fred Ophuls, New York; Van Rensselaer H. Greene, New York; L. R. St. Onge, York, Pa.; William J. Laack, Brockport, N. Y.; F. H. Blake, Sr., Waterport, N. Y.; G. F. Dodson, San Jose, Calif.

Members of the panel, describing briefly their own construction and modernization work, reported addition of a large amount of new freezer space through new construction and conversion from coolers to freezers.

Mr. St. Onge told about a new warehouse now under construction in which the refrigerating system is two-stage Freon with ceiling coils and automatic pump circulation. There are four blast tunnel freezers, each with tailor-made fin coil units.

The point was made that when converting from cooler to freezer space it is good practice to use the old insulation if it is in good condition but if not it should be discarded. Refrigeration should be supplied through unit coolers with ducts to conduct the cold air evenly. Ceiling units are preferred. Do not be too sparing of refrigerating equipment. The trend in freezer construction is toward better protection through adequate vapor barriers, both inside and outside. The cost of new construction varies from 90 cents to $1.25 per cubic foot, the bigger the plant the lower the cost per cubic foot. Reinforced concrete with steel beams was given as the best building construction material.

Materials Handling In Multi-Story Plants

A panel discussion on materials handling in multi-story plants was directed by Paul Ashley, Fresno, Calif. Mr. Ashley said the difficulty of using such equipment in the older multi-story plants is recognized and that this discussion would be confined to the extent to which such installations are workable and profitable.

Mr. Ashley was assisted by the following: C. A. Bowen, Jr., Nashville; Willis Warren, Milwaukee; William Giacomazzi, Jr., San Jose; H. A. Gross, St. Louis; William Cearley, San Francisco; F. H. Prusa, Cleveland; Henry J. C. Brenner, Dayton.

Mr. Prusa described his company's operations in a house with 10 ft. ceilings and three elevators. To make room for the electric fork trucks, cooler doors were replaced with wider ones, operated manually. Six-foot aisles are used. This has relieved the problem of adequate help and has reduced the cost of handling.

Another house reported figures on comparative costs of handling. In 1947 to 1949 these costs were 11 to 12.4 cents per 100 pounds. In 1950 the operation was mechanized and during that year and 1951, costs dropped to 8 cents. Although some space was lost it was amply compensated for by decreased handling costs.

A company operating four warehouses in Minneapolis, St. Paul and St. Louis with total capacity of 4,718,000 cubic feet had investigated handling equipment but decided they would lose too much space since houses were not properly arranged for such equipment. About 90,000 tons are handled and the handling cost is about $2.00 per ton.

Regarding size of pallets, this must be adapted to fit conditions and needs such as width of door, size of elevators, floor loads and other features. One company has standardized on 48x40 pallets, reporting a reduction of 55 percent in labor costs, besides a number of additional advantages. The employees like mechanized handling and work more efficiently and it helps customers in making it possible to move goods faster in and out. This company reported a loss of about 15 percent space but this is more than compensated for by overall savings.

Another company had been using 48x55 and a few 39x44 pallets when they decided to make more use of the larger size. The larger pallet allows a better stacking pattern, more economical handling, and reduces the number of trips required.

Another report was that the smaller pallet is better adapted for use in and out of railroad cars and for small deliveries. Again it was stated that a pallet size must be adopted that will fit the building layout. A new warehouse, recently completed, a one-story operation, constructed by a company operating a multi-story plant, was specifically designed for large pallet operation.

Lien Rights of Warehousemen

A special report was presented by the committee on Lien Rights of Warehousemen followed by a general discussion by a panel consisting of J. K. Storer, New York; E. E. Hesse, Chicago; and P. V. Henningsen, Portland, Ore.

Mr. Storer reviewed the principles of lien rights and directed the discussion. He listed the several phases of lien rights including delivery and storage charges, on merchandise withdrawn, etc. He pointed out that all charges must be paid before release of goods. When making loans precaution must be taken to see that there are no prior liens on the goods. He mentioned that a uniform commercial code is now being presented to state legislatures which embodies warehouse liens, and which the committee favors. Under this proposed code, he said, warehouse liens are made simpler and it does away with much confusion as to rights and liabilities and other provisions.

Answering a question, it was stated that generally the holder of a lien has the rights stated therein and no more. In general a lien is of value only on goods held in possession, and as soon as goods are released or delivered, the lien becomes ineffective. The practice of holding later deliveries until previous charges have been paid is used, but the legality of such procedure might be questioned.

The Military Contract

A panel discussion on the military contract was presented by Vallee O. Appel, Chicago, assisted by Col. C. F. Kearney, Chicago, Chief Quartermaster Market System; Lt. Col. Walter J. Mearls, Washington, D. C., Chief, Storage Division, Munitions Board; C. A. Martin, Jr., Chicago, Quartermaster Market System.

Mr. Appel announced that Col. Kearney, also Lt. Col. Mearls and Mr. Martin had been transferred and it was with great regret he stated that new personnel would be appointed to carry on their work.

Col. Kearney expressed regret of all of them that they would have to leave and said the perfect cooperation provided by the warehousing industry had greatly helped them in their work. Plans, he said, had been developed by a committee and the refrigerated warehousing industry on utilization of space available, and this plan is workable and practical. New regulations, he said, would be out soon on implementation of this plan and he asked for suggestions from the industry.

Answering a question in regard to waiver of lien, Mr. Martin said that the government assumes that all charges are paid up to delivery of the goods and that no liens or other charges, except storage charges, would be allowed by the government. Any charges such as transportation must be assumed by the warehouse before delivery.

Commenting on the plan developed by the committee, Mr. Appel said it would have to depend for its effectiveness upon the good faith of both industry and government.

Open Forum

An interesting period of discussion was conducted on various subjects which were off the record, conducted by E. G. Erickson, Chicago as moderator, assisted by John Jacobson, Worcester; Irving Moss, Jr., Kansas City, Kans.; George Hilgemier, Indianapolis; W. B. Haggerty, Tampa; Gilbert J. Stecker, Louisville; Jack Dawson, San Francisco; A. F. Versen, St. Louis; J. F. Little, New Orleans.

Labor-Management

A panel discussion of labor-management problems was conducted by Frank A. Constangy, Labor relations council of Atlanta, assisted by C. E. Eells, New York; W. D. Stella, New Orleans; M. W. Young, San Francisco; Philip G. Kuehn, Milwaukee; Dan Murphy, Denver; Walter I. Massey, Chicago.

Mr. Constangy, referring to a film just shown on the Textile Workers Union of America, said they must realize that labor-management was going into a new era in which labor is no longer "downtrodden," but is rather moving into a position approaching the point where it almost dominates government. The expressed objectives of the union, he said, is to create better living for workers and for business in general. A disservice has been created through the creation of class consciousness and development of labor political organizations.

Power of Labor Must be Recognized

The outlook, he said, is for business to be completely dominated by labor and while there is and should be reaction against this, it must be realized that there is little chance to stop progress in labor-management regulations. Industrial activity is always marked by unrest and one of the features of this is decreased productivity by workers and the shifting of workers. All this, he said, combines to create a difficult problem for management.

This panel developed a number of interesting questions and answers.

Answering a question as to whether the warehousing industry faces an all-out attempt to organize by one of the big unions, the answer was "Yes." It was suggested that a complete survey of all warehouses should be made on wages, hours and workers' conditions. By having this information, warehousemen are able to meet the practice of labor unions playing one employer against another. The ability of employers to deal effectively with the workers depends upon their having information comparable to what the unions have.

In some cities, employers' councils have been organized for the purpose of compiling and making such information available and they provide a very valuable service. In some cities, it was mentioned, it has been difficult to organize such councils on an effective basis because some of the larger employers will not cooperate.

Answering another question it was described as good strategy to offer additional benefits such as bonus, etc. One company reported that group insurance is provided and employees are sold gasoline and other commodities at cost and this has been very popular. At one time, when a union demanded additional wages, all these benefits were discontinued, and in the resulting negotiations, the desire of the employees for the return of the services, was used as a bargaining point by the company.

A question was asked as to how employees can be convinced that they cannot have constantly increasing pay with warehouse rates remaining as they are. The answer to this was that when employees are being paid high wages they should be shown that fact, together with a full explanation of OPS regulations. It was suggested that employers should not abdicate their duty of explaining these things to the union. It was also suggested that all health and pension benefits should be well publicized among the workers and all such plans involving money should be handled by someone who is thoroughly competent to handle such funds.

As to whether the labor movement is declining, it was said that about 70 percent of the new workers are not organized and that was cited as the reason for the current drive among the unions for a closed shop. It was stated by one of the panel members that labor today is in a more reasonable frame of mind and employers will be able to deal with them in an honest attempt to meet them halfway. It was also suggested that more human relations with expressions of individual recognition is needed in the current employer-employee situation.

Your Banker and You

A panel discussion of banking as related to the warehousing industry was conducted by Harlan J. Nissen, Los Angeles, chairman of the committee on banking, assisted by R. M. Walmsley III, New Orleans; Alex P. Olsson, Portland, Ore.; Leo D. Tyrrell, Camden, N. J.; H. A. Steinmeyer, St. Louis; W. C. Baker, Chicago; C. M. Smith, San Antonio; J. R. Goodfellow, Seattle.

Previous to this discussion, a meeting of the Banking Committee was held Wednesday noon, attended by 25 members of the committee and others to outline the panel discussion and for other business.

Mr. Nissen, opening the discussion, pointed out that banking is important to warehousemen as well as to the customers, particularly when commodity prices are going up.

(Continued on page 56)

Refrigeration Research Foundation—Annual Meeting Reviews Past and Future Programs

HIGHLY significant for the future of refrigerated warehousing is a phrase that aptly describes the meeting May 2 and 3 in New Orleans of the Scientific Advisory Council of The Refrigeration Research Foundation. This annual meeting, established in 1944 at the beginning of the Foundation's career as a technical review session for the 20 scientific advisers, now attracts a large number of industry men. As one industry member remarked, "We used to think these scientific meetings would be over our heads but

Dr. S. C. Prescott, Boston, Mass.
Chairman of the Board, T.R.R.F.

we've learned that here we get at the real basis of progress and it's not hard to acquire working knowledge of scientific problems." The meeting this year particularly brought out the fact that the work of TRRF more and more is bringing practical results.

In accordance with Director H. C. Diehl's plan, the second day's discussion was devoted to technological outlook in various commodity areas and the first day to review of the 20 active projects the Foundation is aiding and to activities under the program for short-term studies in 10 research agencies. Since the membership of the Scientific Advisory Council represents a broad range of commodity areas as well as more general specialization in refrigeration, the discussion of technological outlook had broad national and international significance.

Refrigeration Research Foundation Officers for 1952

Chairman of the Board, Dr. Samuel C. Prescott, Cambridge, Mass.
President, Herbert Farnsworth, Boston, Mass.
Vice-president, William A. Sizer, Chicago, Ill.
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Poultry Problems

In the discussion of poultry problems, Dr. Cliff C. Carpenter remarked that behavior of washed eggs in storage is still a problem to be faced. Black light candling is proving valuable. Poultry Producers of Central California (a large cooperative) is getting good results with its clean unwashed egg program. There is some interest in additional study of shell treatments and in better sanitizers and detergents for sanitary purposes. Dr. Carpenter, president of Institute of American Poultry Industries, believes that educational work, to disseminate results of research more widely, is a present need and his organization is very active in holding regional meetings. In poultry plants, in-plant chlorination is making progress.

Presently the studies on high-temperature scalding of poultry are important. The Institute and the Foundation are participating collaboratively in studies conducted by the Western Regional Research Laboratory on scalding and other preparation steps for frozen turkeys. Other research agencies are also engaged in research related to this problem, and the answers to the problem will be available soon. Since the storage industry also recognizes the need for a program of training, the Foundation is giving consideration to repetition of its training-conference program.

Unfortunately Dr. George Stewart of University of California and Dr. Mary Pennington of New York City were unable to be present. The discussion revealed that egg washing, poultry processing, and sanitation are major research frontiers and that noteworthy progress is being made.

Fisheries Products

In the field of fisheries products, a research problem of large magnitude is a practical test of quality, one that can be used for sound estimates of storage potential and ultimate consumer quality of given lots of fish. This test will require further study of the chemistry, bacteriology and physiology of fish species, since present knowledge seems inadequate for the establishment of suitable testing, and investigations completed at present have not fully established the rates of deterioration of species under various conditions.

This problem is basic to the general question whether costly development of freezing at sea will be necessary, as it is to many other problems of handling and storage. Comments reflected the fact that excellent progress is under way in processing and distribution of fisheries products.

Otto C. Young, Fisheries Research Board, Ottawa; James M. Lemon, U. S. Branch of Commercial Fisheries; Prof. Bernard E. Proctor, M I T; and Dr. Donald K. Tressler, Quartermaster Food and Container Institute, made important contributions to the discussion of fisheries products.

Dr. E. A. Fieger, Louisiana State University, who has conducted a highly successful project with Foundation aid on Gulf shrimp, was present and discussed his investigations directed toward quality testing as well as other phases of the project. Present collaboration of the Foundation with National Fisheries Institute on breaded shrimp clinics was cited as an example of inter-industry

collaboration that aids in the important matter of continuous educational work. Dr. Proctor of Massachusetts Institute of Technology has had an active part in the technical phases of the breaded-shrimp clinics.

Fruits and Vegetables

General opinion reflected the probability of advancement in heat-treated and precooked fisheries products, more uniform sanitary practices, as well as improved sanitary methods, and possibly still further development in packaging and handling.

Wm. A. Sizer, Chicago, Ill.
Vice-president, T.R.R.F.

In the discussion of fruits and vegetables, W. T. Pentzer of USDA commented that storage temperatures for fruits and vegetables are pretty well established, with possibility for further development of knowledge of relative humidities. Outstanding in recent developments are the better treatments for decay prevention, for example the Dowicide A plus hexamine treatment and Phendor liners and cartons, that have shown advantage in studies on storage of Florida oranges. Antibiotics are being considered for prevention of diseases, thus far on a small scale. Long-term studies on new varieties will continue. Basic studies on physiological effects of low temperature are still needed.

Scalding of apples is still a large problem; last year there were some severe losses. Better measurements for relative humidity are still needed, as well as more information on equilibrium between humidity and moisture content of many products. In present studies research workers are getting good data on relative humidity inside packages.

Prof. Frank W. Allen, University of California, reviewed problems such as internal browning and bitter pit disease, which are among those of current importance, and the possibility that dual storage temperature may be advantageous, that is, high for a few days and then lower. Handling of stop-drop sprayed fruit is still a problem in some areas. He does not expect large development of gas storage. Dry ice is now used with nearly all shipments of cherries to produce carbon dioxide and the practice may extend to other fruits. There is a great deal of interest in hydrocooling and vacuum cooling; the latter is used commercially on a small scale for lettuce. Prepackaging is undergoing development in many areas.

Citrus Storage

Dr. Paul Harding, USDA scientist stationed at Orlando, Florida, who has had a large part in studies of citrus storage in which the Foundation has participated, reviewed these studies on the previous day of the meeting. Commercial storage of Florida Valencia oranges is growing as a result of these studies. Dr. Harding mentioned current research interest in Florida on the effect of fertilizers on storage quality of fruits and vegetables. Such factors as soils, varieties, packaging and others are all part of the outlook for fruits and vegetables.

Dairy Products

The discussion of dairy products was greatly aided by the presence of Dr. S. T. Coulter, University of Minnesota, who presently sees little hope for frozen concentrated milk or single strength milk unless it is stored near minus 20 F. The protein-precipitation problem has not been solved. He can see reason, however, for consideration of sterilized refrigerated condensed milk. So far refrigeration for aseptically canned milk has not been suggested but there is a probability that it would help. Mr. Diehl mentioned a forthcoming meeting with the Evaporated Milk Association for consideration jointly of technical problems.

Other Studies

Director Diehl mentioned the Foundation's interest in meat storage problems and studies in which the Foundation has taken part in the past. A promising field for investigation is that of shrinkage. Unfortunately Drs. Roy Newton of Swift & Co. and Henry Kraybill of American Meat Institute Foundation were unable to be present because of previous commitments. Prof. C. E. Baker of Purdue University, leader of a Foundation-aided study on atmosphere control in fruit storage and also of a short-term study on coffee, reviewed studies on coffee, which have revealed benefits from cold storage, of sufficient magnitude for possible later use, but not to a large extent at present because of economic conditions.

Progress on Peanuts

Dr. J. G. Woodroof's review of progress on peanuts, pecans and candies revealed definite progress. Dr. Woodroof has conducted a series of studies on these products in the Georgia Experiment Station with assistance from the Foundation and National Confectioners' Association. The important problem of condensation on packages and of measurements of relative humidity were ably discussed by Prof. Burgess Jennings of Northwestern University, William J. Finnegan of Los Angeles, and Prof. Karl Kayan of Columbia University, who are members of the Council as well as leaders of projects aided.

Dr. H. C. Diehl, Colorado Springs, Colo., Director, T.R.R.F.

Peanuts, candies, Florida oranges, and batteries of the lead acid type were among products investigated with Foundation aid that were mentioned as coming to refrigerated storages in large quantities now. Investigations of standard products of the poultry, dairy, fruit and vegetable, meat, fisheries and other in-

dustries have led to improvements and sharp industrial interest in numerous possible improvements.

In summarizing the two days' meeting of the Council, Dr. S. C. Prescott, Chairman of the Foundation's Board of Governors, remarked that this meeting was outstanding for the large attendance of industry men and the scope and practical value of the discussion.

As pointed out by Dr. Samuel C. Prescott, chairman of the board who presided, this meeting marked a new high in attendance and interest shown by industry members, not on the board. During the course of the two days, a majority of the industry leaders were present and participated in the discussions. More and more, Dr. Prescott said, the refrigerated warehousing industry is finding and applying practical information from the findings of The Foundation. Two things, he pointed out, stood out at this meeting: the attendance and general scope of the discussion. Numerous constructive suggestions were made.

Active Projects

The projects active in 1951 are:

Physical stability of frozen milk, S. T. Coulter, University of Minnesota.

Frozen eggs — their handling, freezing and refrigerated storage at different temperatures, A. R. Winter, Ohio State University.

Causes and prevention of undesirable changes in the quality of fresh and frozen Gulf shrimp in refrigerated storage, E. A. Fieger, Louisiana State University.

Effect of variation and fluctuation in temperature during course of transportation and warehousing of frozen foods, R. R. Legault, Western Regional Research Laboratory (U. S. Department of Agriculture).

Freezing and storage of crab meat, James M. Lemon, Branch of Commercial Fisheries, U. S. Fish and Wildlife Service, and F. P. Veitch, University of Maryland.

The processing, handling, freezing and storage of poultry (turkeys), Hans Lineweaver, Western Regional Research Laboratory (U. S. Department of Agriculture).

Investigations of Staphylococcus in foodstuffs, Gail M. Dack, University of Chicago.

Investigations of the refrigerated storage of citrus fruit from Florida and Texas, Paul Harding, Howard Johnson and James S. Wiant, U. S. Department of Agriculture.

Refrigerated storage of peanuts and pecans and their products, J. G. Woodroof, Georgia Agricultural Experiment Station.

Effect of refrigerated storage on popping volume and quality of popcorn, J. C. Eldredge, Iowa State College.

Refrigerated storage of candy, J. G. Woodroof, Georgia Agricultural Experiment Station.

Refrigerated storage of cheese. 1. Control of entomological factors, R. J. Dicke and W. V. Price, University of Wisconsin.

Refrigeration of peanuts and pecans, J. G. Woodroof, Georgia Agricultural Experiment Station.

Influence of handling practices and different storage conditions on the behavior of Texas Bermuda onions R. F. Cain, Texas Agricultural Experiment Station.

Investigation of physiological factors in cranberries that affect storage quality, C. R. Fellers, University of Massachusetts.

Low temperature psychrometry and moisture behavior at subfreezing temperatures, B. H. Jennings, Northwestern University.

A study of refrigeration methods, especially as to the maintenance of desired relative humidities, with respect to the preservation of various food products, W. L. Mallmann, Michigan State College.

Heat transfer aspects of refrigerated warehouse packaged goods in steady and unsteady state, Carl F. Kayan, Columbia University.

Investigation of atmosphere control, air purification and air conditioning in refrigerated warehouses on the quality of fruits, vegetables, eggs, meats and other commodities, C. E. Baker, Purdue University.

Neutralizing ammonia gas in storage rooms with sulfur dioxide and other chemicals, A. L. Ryall, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, Fresno, Calif.

Scientific Advisory Council Advises on Research

OUTSTANDING in the work of The Refrigeration Research Foundation is a group of technical men known as the Scientific Advisory Council who do their work quietly and with little publicity, rendering advice and suggestions on research work to The Foundation. The personnel of this council is as follows:

Prof. Frank W. Allen, Division of Pomology, College of Agriculture and Pomologist, California Agricultural Experiment Station, University of California, Davis, Calif.

Dr. Cliff D. Carpenter, president, Institute of American Poultry Industries, Chicago, Ill.

Dr. William H. Cook, director, Division of Applied Biology, National Research Council, Ottawa, Canada.

William J. Finnegan, consulting engineer, 2121 Pasadena Ave., Los Angeles, Calif.

Prof. Burgess H. Jennings, chairman, Department of Mechanical Engineering, Northwestern University, Evanston, Ill.

Harold Humphrey, Research Manager, Birds Eye Division, General Foods Corporation, New York.

Charles W. Kaufman, Executive director of Research, Kraft Foods Co., Chicago, Ill.

Prof. Carl F. Kayan, Executive Officer, Department of Mechanical Engineering, Columbia University, New York.

Dr. Henry Kraybill, Director Research and Education, American Meat Institute Foundation, Chicago, Ill.

James McW. Lemon, Refrigeration Specialist, Branch of Commercial Fisheries, United States Department of Interior, College Park, Md.

Dr. Walter L. Mallmann, Professor of Bacteriology and Public Health, Department of Bacteriology and Hygiene, Michigan State College, East Lansing, Mich.

Dr. Roy C. Newton, vice-president, Research, Swift and Company, Chicago.

Dr. Mary E. Pennington, Consultant on Perishable Foods and Refrigeration, 233 Broadway, New York.

W. T. Pentzer, Principal Horticulturist, Bureau of Plant Industry, Soils, and Agircultural Engineering, Agricultural Research Administration, United States Department of Agriculture, Beltsville, Md.

Dr. Bernard E. Proctor, Professor of Food Technology, Massachusetts Institute of Technology, Cambridge, Mass.

Dr. Walker V. Price, Professor of Dairy Industry, University of Wisconsin, Madison, Wis.

Dr. George F. Stewart, Head, Division of Poultry Husbandry, University of California, Davis, Calif.

Dr. Donald K. Tressler, Technical Director, Quartermaster Food and Container Institute, Chicago, Ill.

Otto C. Young, Scientific Assistant to the Chairman, Fisheries Research Board, Ottawa, Canada.

Membership Meeting

THE full membership meeting was held Sunday afternoon to hear reports from the officers and director and one progress report on a study of fresh and frozen milk concentrates.

The treasurer's report presented by E. G. Erickson of Chicago showed a healthy relation of income and expenses, with a comfortable backlog of capital investment from pledges paid in advance and from gifts.

Presiding was Dr. S. C. Prescott who said he agreed with Dr. Diehl that the Foundation has, to a high degree, accomplished results of practical value to the industry. It has kept constantly in touch with the needs of the industry and has been increasingly devoted to one objective, that of public service. The soundness of this program from the standpoint of both industry and the public is quite evident, he said.

Chairman of The Board Reviews Progress

"Our main interest in being here," he continued, "is distinctly of the present and to take stock of our Foundation which in a brief eight years has made a worthy history of its own. It has been clear to me during all the years since the inception of the Foundation that we have all been increasingly motivated by one desire, the advancement of human welfare and the recognition of the needs and desires of the consuming public through the scientific upbuilding of an industry with great capacity for public service.

"Today it does not require argument to convince you of the soundness of this ambition or to prove to you that the processes of research already carried out through the Foundation have been beneficial both to your industry and to the public. In supporting these endeavors you are sharing in the great forward movement that has characterized American industry for the past three or four decades.

"Research has been the touchstone of progress and has been and must continue to be of untold value and significance. I observe this in every industry which utilizes or transforms the materials and products of nature. It is clear that research has improved and multiplied the commodities useful to man. It is obvious that research intelligently conducted and applied has been a great factor in conservation and must continue to be necessary in the years to come.

"The refrigeration industry, is a branch of food technology, since it deals extensively with raw or processed perishable foods, has an economic as well as a scientific interest in knowing how research can broaden and deepen our knowledge of the characteristics of these commodities, and how it can aid in the control of the physical environment, i e the conditions of storage under which they are maintained, for herein lies the key to successful operation.

Control of Environment

"Control of the environment of perishable foods is of vast importance whether in a refrigerated warehouse, a food manufacturing plant, a supermarket, or a family larder. The factors that enter into control of environment are several — temperature, humidity, atmospheric pressure, time, sanitation, protection from microbic or other pests, suitable wrapping and handling. Each item in this list may be a focus of a series of investigations, rigidly controlled, with multiple observations recorded and checked and eventual conclusions of fact. Overall must be intelligent management, the desire to know, and the appreciation of what data are to be sought, and why they are important or essential. This is what we mean by individual research in a limited or special field.

"The Foundation is interested not merely in the study of problems which have already arisen, but is looking ahead to new fields in which research may be of advantage to the industry.

"An illustration of the forward-looking attitude of men of leadership in our Foundation is found in the assistance of some outstanding members toward the establishment in the new home of the Department of Food Technology at M. I. T. of a Low Temperature Research Laboratory, for the study of applications of low temperature in industry. As a research station this laboratory will not only be a place for the study of new problems but it will also serve as a training ground for advanced students in food technology and refrigeration engineering.

"Within our own special field I think we can face the future, confident of useful scientific progress and with an uplifting sense of integrity, brotherliness and united desire to promote the good of all."

Herbert Farnsworth, president, made a brief report explaining that the accomplishments during the year would be presented by the other officers. Under the direction of "Dutch" Diehl, he said, the Foundation had accomplished much of value to the industry and its work would still further the progress of the entire industry.

Director's Report

Dr. H. C. Diehl presented an informal report as Director, explaining that the complete printed report was already in the hands of members. This report gave a practical, general discussion of kinds of research, making use of research, mention of the commodity storage manual, and mobilization for war. It gives a detailed discussion of achievements in specific commodity areas, activities during 1951, and list of publications during 1951, including articles and speeches, fact file sheets and commodity storage sheets supplied in 1951. A complete list of projects inaugurated prior to 1951, with name of director and amounts of grants is included, together with a list of officers and directors, executive committee, board of governors, sustaining members, and personnel of The Scientific Advisory Council.

A growing procedure in the work of the Foundation, Dr. Diehl said, is not to scatter but to limit studies to industrial need and timing, the aim being to obtain the utmost in usable, practical value.

As an example, recent cooperation with the fishing industries has developed technical information of value to each industry and has created an increasing role for refrigeration. In the field of low temperatures there is a great dearth of information and in this field there is more to be learned than in any other. We should get this information so that we will have it when the need arises, he said.

They are now giving more thought not only to information in new areas but also to disseminating this information, because to make full use of the benefits of research this information must be readily available. To that end, the commodity storage manual has been designed which will have complete information on all leading commodities. More and more it becomes evident that as, and when, technical data is gathered on a subject, it becomes interrelated to other subjects, and this fact serves to broaden the whole subject of research.

Refrigerated warehousing is not only a physical operation, but it also provides a service to the public and other industries. This fact has led to studies of commodities never thought of before, such as electric storage batteries.

Frozen Milk

An interesting progress report was made by S. T. Coulter of the University of Minnesota on a study of the physical stability of frozen milk. These studies show, he said, that it is technically possible to produce and store frozen concentrated milk but present marketing facilities are not adequate because the product must have constant adequate temperatures which are not now in common use. There is a possibility in sterilized

(Continued on page 56)

Division of American Warehousemen's Association

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THIS MONTH IN BRIEF

The Storage Advisory Committee, representing the refrigerated warehousing industry, reported on its work and accomplishments and made recommendations for future work at the annual convention at New Orleans.

A new produce terminal market has been completed at San Antonio, where more than 60 million dollars worth of fresh fruits and vegetables move through a plant which has more than three hundred tons of modern refrigeration equipment.

Public warehouse space utilization on April 30 was 59 and 76 percent for coolers and freezers respectively. Cooler use was slightly above average and freezer occupancy was eight points above its five-year average level.

Costing approximately $350,000, a new warehouse has been completed at Sacramento, Calif. for the exclusive storage of almonds and other nuts.

Storage Advisory Committee Reports on Work

ARNOLD HAMPSON
Chairman, Storage Advisory Committee

THE Storage Advisory Committee is a group which has been appointed by the Secretary of Agriculture to serve the Agricultural Research Administration of the United States Department of Agriculture. As the committee's name implies, it is an Advisory Committee and when functioning its members are, in a sense, government employees.

Initially, all eleven members were chosen from among our colleagues in the refrigerated warehousing industry but a system of rotating membership has removed some of our industry associates who have been succeeded by talented and able men of leadership from businesses using cold storage facilities.

Meeting in California

The most recent meeting of the committee was held at the Western Regional Research Laboratory in Albany, Calif. in order to observe the facilities, personnel and general nature of certain research projects of primary interest to the committee. The committee was in every respect gratified by its observations at this splendid modern laboratory.

The Agricultural Research Administration is also served by other advisory committees, each of which is charged with consideration of research concerning an important agricultural commodity. There is for instance the livestock committee, the poultry committee, as well as others for dairy, fruits, rice, citrus, nuts, vegetables, etc. All committees' findings are most carefully scrutinized and considered by A.R.A. and its Agricultural Research Policy Committee. Members of the latter committee have demonstrated keenest attention in the Storage Committee. This attention has derived, they state, from their impression that in general terms the Storage Committee is extremely well informed and conversant with problems concerning it.

The reasons for this important truth lie in the very close association the majority of this group has maintained in your own Refrigeration Research Foundation. The committee's knowledge of the status and implications of research in which it is concerned has unquestionably been of substantial value and particularly in its earlier days was instrumental in avoiding considerable duplication of work. It would be difficult to overestimate the extent to which the committee has been aided by its association with the Refrigeration Research Foundation.

The field of work covered by the Cold Storage Advisory Committee goes beyond the usual conception of cold storage per se. It also embraces the use of refrigeration in the home and on the farm as well as quite importantly, locker plants.

The committee has registered strongest opposition to the pursuit of certain types of research which were instituted in contradiction to its recorded recommendation. This research appears to be wholly unwarranted. It is, in our opinion, wasteful of funds and unnecessary since the components of industry are themselves prosecuting such studies diligently in every quarter of the country. This project was handled under contract at a figure of as, I recall, about $80,000 and is aimed as ascertainment of costs for adapting mechanical handling equipment in existing cold storage plants.

Work Under Way

Work under way now in A.R.A.:

1—Frozen milk concentrates and their storage requirements.

2—Study of temperature levels and fluctuations on the quality and storage life of frozen foods.

Report presented at 61st Annual Convention National Association of Refrigerated Warehouses.

3—Refrigerated storage of citrus fruits and grapes.

4—Atmospheric control, modification and purification in refrigerated warehouses.

5—Dehydrofreezing of foods, as required by the interests and needs of the Armed Forces.

6—More effective use of refrigeration in the movement of farm products to market in order to retain desirable qualities, reduce decay and wastage.

7—Freezing and storage requirements of precooked frozen foods.

8—Educational programs on the importance of adequate refrigeration of perishable foods with producers, consumers and those engaged in transportation and distribution.

9—Freezing and storage of poultry, especially turkeys.

10—Methods for controlled curing and cold storage of onions, especially the Bermuda type.

11—More comprehensive basic study of enzyme systems in fruits, vegetables and meats as related to the quality of frozen products.

12—Research (basic and applied) on quality specifications, such as color, of raw and processed fruits and vegetables marketed as frozen products.

13—Effect of air velocities and air distribution on cooling of perishable products for transportation and storage.

14—Studies of the concentrating, freezing, and storage of fruit juice.

Work recommended

1—Packaging. Since the adequacy of packaging for the maintenance of product quality is of paramount importance in obtaining maximum efficiency of warehousing and maximum preservation by refrigerated storage for a commodity, the committee favors, in principle, every proper investigation which has for its objective the improved packaging of perishable farm products. The need for specific research in this field applies particularly to poultry, eggs, meats, cheese, fruits and vegetables. Research workers are needed to study requirements of a commodity in relation to available packaging materials and methods, and new developments in this field. The committee strongly recommends the appointment of a Packaging Advisory Committee.

2—Bone Darkening. Further study of the causes and elimination of bone darkening in frozen poultry.

3—Meat Shrinkage. Further study of shrinkage in meat during freezing and storage.

4—Fat Deterioration. Further basic study of causes of animal fat deterioration in products during refrigerated storage.

5—Air Velocity. Development of added data relating to optimum air velocities in tunnel freezing of variable package sizes to make better use of existing facilities during a national emergency.

Maintenance of Research

It has seemed important to call attention to the need for "Maintenance of Research." The committee recognizes the need generally for curtailment of federal expenditures. The committee strongly holds, however, that every proposed curtailment in agricultural research should be carefully analyzed and decided on the basis of (1) whether such curtailment is in the national interest, (2) whether such curtailment would seriously endanger the investment already made, and (3) whether such curtailment may not seriously and adversely affect the national mobilization and defense in the longer range.

The committee strongly holds, as a principle, that agricultural research which has been thoroughly studied before initiation and is important in the national interest, should be maintained at least at the present level of activity. The committee considers the curtailment or abandonment of essential agricultural research at this time as an extremely unwise policy. It should be recognized that when expenditures are curtailed in industry, the latter does not necessarily reduce its research efforts. Public Law 733 (the Research and Marketing Act) states that "it is the intent of Congress to assure agriculture a position in research equal to that of industry which will aid in maintaining an equitable balance between agriculture and other sections of our economy.

Among other things it has also recommended an "Information Budget." The reporting of research results in an integral part of research itself. It is essential that these results be made promptly available to industry and agriculture. Recent congressional action in substantially reducing budgets for information work has prevented the placing of research results in the hands of those in industry and agriculture who need and can use this information. This situation needs correction.

In closing this report I wish to emphasize the desirability of this audience bringing to that attention of the Cold Storage Advisory Committee any knowledge which may help in the discharge of its responsibility.

Refrigerated Warehousing

Southeastern Chapter

A MEETING of the Southeastern Chapter of the National Association of Refrigerated Warehouses was held during the annual convention at New Orleans.

The chief item of business transacted was formulation of a plan for the interchange of information on storage space available among all members. On a stated day of each week a report will be made by each member warehouse to Wm. Haggerty, chairman of the chapter, at Tampa, Fla. There it will be compiled and the information will be available to all chapter members. This service is to be provided as a convenience to storers seeking space, which may be short in one city, but available in another, thus enabling the storer to use the nearest available space. If this works out on a successful basis, it is expected that other chapters will adopt a similar plan.

Plans also were made to make a complete survey of chapter members covering the service available, closing hours, the labor situation, salaries and wages, insurance, pensions, etc.

Chapter officers for the following year were elected as follows: Chairman, Wm. Haggerty, Tampa Cold Storage & Warehouse Corp., Tampa, Fla.; vice-chairman, Howard Upham, Tennessee Quick Freezing & Storage Corp., Memphis, Tenn.; secretary-treasurer, Wm. K. Davis, Davis Frozen Foods Inc., Lexington, N. C.

Refrigeration Service For LCL Shipments

NEW markets have been opened to shippers with the inauguration by Canadian National Express of a system-wide refrigeration service for less-than-carload shipments of perishable commodities. The new system of refrigerating sections of express cars, developed by the C. N. R. express department under the supervision of L. J. Oliver, transportation supervisor, will broaden markets for such commodities as cut flowers, fish, fruit, fresh and cooked meats and other perishable items.

The refrigeration service, having successfully passed exhaustive tests in various parts of Canada, now has gone into system-wide operation. Because the equipment used for refrigeration is comparatively light and maneuverable, it is possible to increase or decrease the refrigerated area according to the volume of traffic moving.

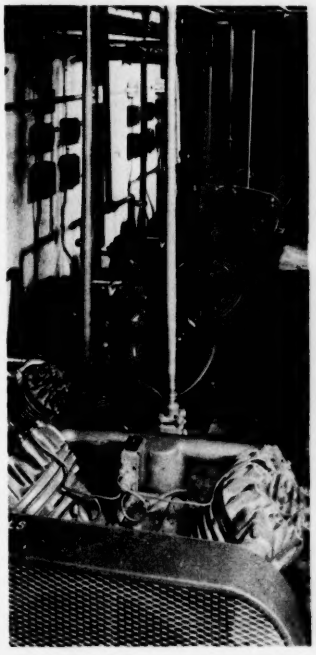
Skyview shows a closeup of new San Antonio Produce Terminal

NEW PRODUCE TERMINAL MARKET

More than sixty million dollars worth of fresh fruits and vegetables moving through new plant is protected by over three hundred tons of modern refrigeration equipment.

DEEP in the heart of Texas, the San Antonio Produce Terminal Market which opened last fall has the distinction of being the second largest wholesale produce terminal in the world. It is estimated by Lloyd W. Edwards, market manager, that during the first year of operation of the new market, more than $60,000,000 worth of fresh fruits and vegetables will pass through the terminal to serve not only the local trading area of San Antonio, but territories extending as far east as Memphis and Louisville, as far west as Denver, from the Gulf of Mexico on the south as far north as Minneapolis and St. Paul. Figures which were released for the year 1946 show that the San Antonio wholesale produce system that year handled 22,500 carloads of produce valued at $34,000.000. This year with the new market in operation it is expected that this figure will be almost doubled.

Covering more than twenty-seven acres, the new Terminal Produce Center is the culmination of an idea which had its beginning in 1946. At that time it became apparent that new facilities for the original produce market of the city, a rapidly growing enterprise, had to be provided and in 1948 the San Antonio Produce Terminal Market, a Texas corporation, was organized.

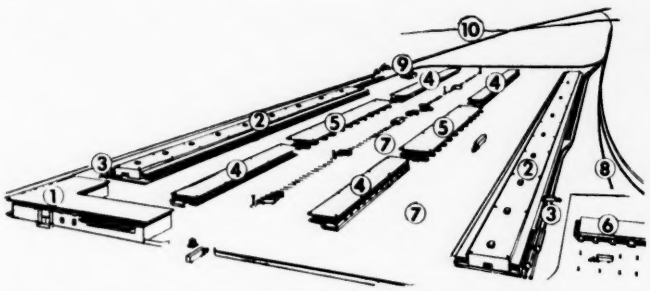


A portion of the installation of compressors which provides refrigeration for preservation of produce and ripening of bananas.

In nine large buildings on the huge acreage, the business of supplying a large part of the nation's population with fresh fruits and vegetables, continues week in and week out and the production output of the market seems to be steadily on the increase.

The market totals more than 102,000 square feet with more than 60,000 square feet of this space occupied by the building structures. At the north and south end of the tract, two huge merchants' buildings contain 84 separate units where produce distributors and shippers have leased space for terms as long as twenty years. At the front of each of these long buildings is a 28-foot dock, covered with a steel canopy. The docks are truck-bed height which eliminates the necessity of lifting merchandise when loading or unloading.

Each of the buildings also has a 12-foot covered dock in the rear, served



Plot plan of new San Antonio's Produce Terminal. 1. Administration building. Market manager, food brokers and other offices. 300 seat restaurant, barber shop and showers. Completely air conditioned. 2. Merchants' building down each side of the market. Eighty-four merchants' units include refrigeration, areas for handling, distribution, and shipping. 3. Double railroad tracks, with all merchandise handled at truck and railroad bed levels on spacious, covered docks. 4. Dock areas to accommodate produce trucks with facilities to receive and assemble produce to be loaded. 5. Farmer's truck docks. Two covered docks provide individual spaces for 120 trucks. Beside each is room for another truck to load produce bought. 6. Humble Oil and Refining Company service station. One of the largest in the world with fourteen high pressure pumps, facilities for lubrication and washing of the largest tractors and trailers. Special equipment for flushing trailers. 7. Twenty-seven acres of working area, covered with asphaltic concrete. In any weather hard surface driving areas and shed cover will allow almost normal working conditions. 8. Team tracks for handling excess rail cars. 9. Public scales and icing facilities. 10. New north-south expressway.

by double railroad tracks. One building was so long—1,128 feet—that the dock was broken, because freight trains of cars that long could not be switched.

Directly in the center of the market are the farmer's decks, two long covered buildings with 120 stalls. Farmers rent these stalls on a day to day basis, for each selling period as their individual need arises.

The stalls and brokerage buildings are surrounded to the east and west by four buildings which provide facilities for out-of-town buyers. A huge administration building, completely air conditioned provides more than 40 offices, a 300 seat restaurant and many other conveniences for the thousands who have a part in the operation, or who do business in the market.

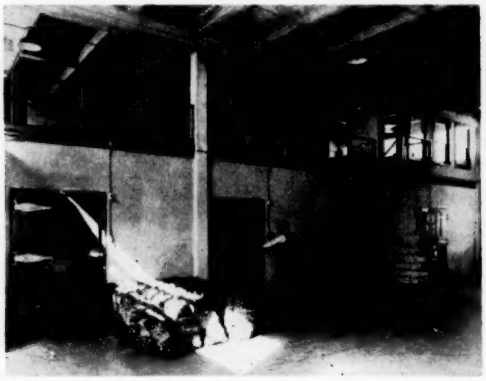
There are nearly 6½ city blocks of paving, and more than a mile of railroad track within the grounds. In building, enough reinforced concrete to pave three miles of highway, 12 railroad cars of structural steel, and 15 railroad carloads of reinforcing steel were used. There is a half-acre of glass in the windows, and enough roofing covering the docks to cover nearly a hundred homes.

Refrigerating Facilities

With such a vast amount of produce moving through the market at such a rapid pace, it would hardly seem possible that there would be time to place any of it in refrigerated storage, and yet, next to the size of the market, refrigeration is one of the most important phases of the market's operation.

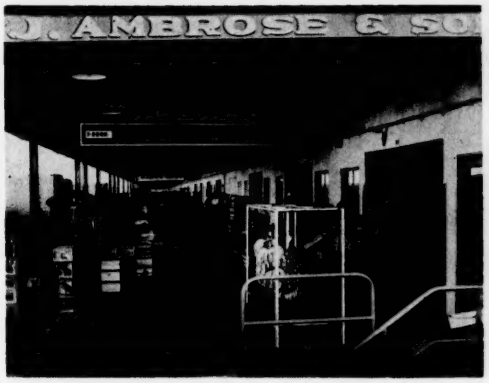
Throughout the entire market there are more than 300 tons of high temperature refrigeration. Installation of the refrigeration has taken on a rather unusual pattern because each of the merchants who leased space, handled their own refrigeration contracts. The entire refrigeration load comprising a total of 370 horsepower is comprised of 317 horsepower in new units and 53 horsepower in used refrigeration units that were moved from the old market.

Of the total new refrigeration installed in the market, over forty-two percent of the refrigeration coils are Recold Standard Humid Air ceiling type freon blower coils. A total of seventy-four Humid Air Coils have been installed in the market by three different refrigeration contractors. As large as this number is, it would have been still greater had it not been for the fact that much of the equipment

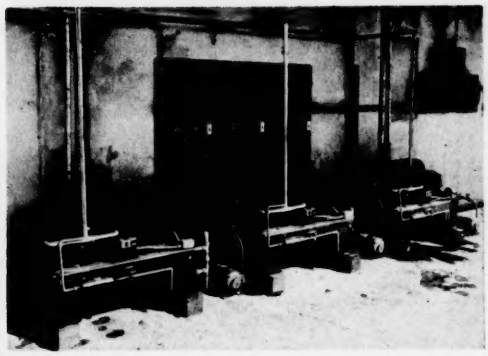


One of the three compartment refrigerated rooms in the San Antonio Produce Terminal. Three compartments each 20x20 ft. make up a total refrigerated space of 60x20 ft.

Two Standard humid air coils, provide low side refrigeration in one of the many refrigerated storage coolers used by the produce jobbers. More than 300 tons of refrigeration are in constant operation in this produce warehouse.



A leisure moment in the busy avenue of produce which is part of the operation of the Terminal where trucks constantly come and go with their cargos of perishable produce. Here is one of the loading docks serving both produce jobbers, shippers and buyers.



Brunner compressors, each of which operate Standard ceiling blower coils for refrigerating a bank of three refrigerated coolers. This is typical of many such installations which are part of the huge refrigeration system that is now in operation in the San Antonio Produce Terminal.

used in the old market was moved to the new location.

Temperatures range from 68 down to 34 F. with relative humidity ranging from 50 percent to dripping wet lettuce and avocado holding rooms.

Although each of the refrigeration contracts were made separately, the layout of the entire job follows pretty much the same pattern and the type of equipment used is typical throughout. Cooling water conservation and economy are observed in the majority of the installations.

For the most part each of the separate units occupied by the commission merchants have a series of three storage refrigerators in a continuous row. Each of these individual coolers are 20x20x10 feet making a total storage space of 20x60x10 feet. Walls, ceiling and floor have four inches of insulation. Refrigeration cooling equipment in the majority of these rooms carries the Recold trade mark. For example in one room there is a Standard Humid Air Coil model 948 and along side of it a model 1148. In another room with a heavier refrigeration requirement there are two of these same coils, model 1348, each having a Btu capacity of 14,540 at 10 F. T.D. Still other rooms combine the model 1148 with a model 1348 giving a total of 35,060 Btu. capacity at 10 F. T.D.

Throughout the entire market the cooling equipment varies. For example one refrigeration contractor, the Industrial Refrigeration Company of San Antonio, installed a total of 40 Standard Humid Air units as low side equipment operating on 18 Brunner three and five horsepower condensing units making a total of 72 horsepower. On these installations, condensing cooling water is provided by nine cooling towers, varying from 10 to 50 tons. Most of the cooling towers are figured at 78 F. wet bulb with an average water consumption of 4 gpm. Where the cooling towers are used they are served by Peerless "Fluidyne" pumps. Although one tower will serve several 5-hp condensing units, each condensing unit is provided with its own circulating pump with a common suction but separate discharge to its individual tower header.

Eight other individual contracts which were handled by P. K. Crawford of San Antonio called for 18 Recold Standard Humid Air Coils, operating on 15 Brunner condensing units, three Frigidaire condensing units and 16 Peerless pumps.

Additional Recold equipment was installed by the Bickham Refrigeration Company of San Antonio. This contractor used 16 Standard Air Coils, three Mills 5-hp condensing units with a 15-ton atmospheric cooling tower and five Peerless pumps for the condenser water cooling circuit.

The roof deck of the market is made impressive by the number of cooling tower installations that seem to form an individual skyline. An unusual feature of the tower installations is a by-pass of the tower return water from the nozzles to the ponds to prevent tower ice accumulation and nozzle freeze in the suddenly varying Texas weather. This is accomplished by a Minneapolis-Honeywell three-way valve with a thermostat sensing lowered temperature of the tower pond water.

Unit Spaces

Typical of the many Recold installations throughout the market is the unit space occupied by the Catalani Produce Company where a total of six Recold standard humid air coils operate in three separate storage rooms. Each room is equipped with a pair of coils, model 1148, operating from a 5-hp Brunner condensing unit. Each of the three rooms, each 20x20x10 ft. are held at variable temperatures depending on the type of produce that is stored. A unique arrangement is achieved in the wet lettuce and produce room by bringing the coil condensate drain from the adjoining room into the wet room and allowing the moisture to drain onto the floor. This results in a very high relative humidity which is ideal for the lettuce and other type of produce stored in this room.

All of the equipment installed in the San Antonio Produce Terminal Market was sold by United Refrigertion Company of San Antonio, Recold distributors.

Banana Storage

Certainly no produce market of this kind would be complete without adequate facilities for ripening bananas and throughout the market there have been a total of 14,698 square feet, or 140,838 cubic feet of prefabricated storage coolers for bananas and assorted fruits and vegetables which was sold and installed by Friedrich Refrigerators, Inc., under various contracts and several independent produce firms. Individual storage coolers of varying sizes have been installed

and these have been divided up into from two to six compartments.

A total of 172.5 hp, made up 39 condensing units from 3 to 7½ hp capacity provide the refrigeration for all of these coolers.

The process of bringing the green bananas to a full, golden yellow, slightly flecked with brown, indicating perfect ripeness starts when the fruit is loaded into fast trucks at Brownsville, Texas and rushed to the San Antonio Terminal where it is placed under refrigeration that will ripen it to meet the demand of the current market.

Temperatures

The approximate temperatures for ripening bananas ranges from 70 to 56 F. depending on whether the fruit is to be ripened in a period of anywhere from four to ten days. If for example it is desired to ripen the fruit in a four day period, the temperature is held at 70 F. the first day and then graduated down to 60 F. For slow ripening periods such as ten days the temperature is held at 58 F. for the first nine days and then dropped to 56 F. for the tenth day.

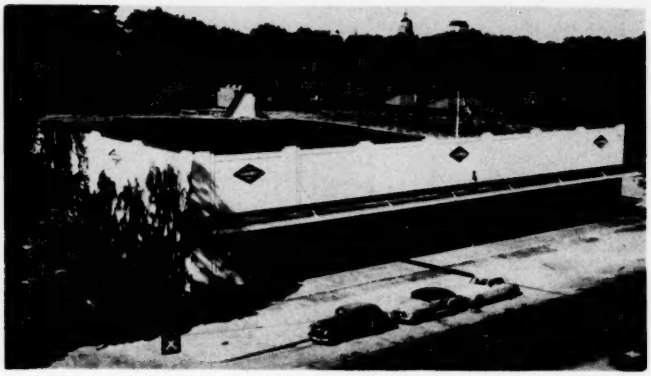
During most of the ripening process, it is necessary to maintain a relative high humidity somewhere between 85 and 90 percent. This is obtained by the use of overhead vapor sprays which keep the fruit moist. The moisture enters the stalks and is absorbed by the fruit itself, thus preventing undue drying.

It is interesting to note that during the first two days of storage the bananas begin discharging a gas which hastens the ripening process. With the generation of this heat it is necessary to lower the temperatures accordingly. The temperatures of course will vary depending upon the condition of the fruit when it arrives at the terminal.

Occupancy Increases

Recovering from a bad start in the fall of 1951, a lean produce year in the Southwest due to a severe freeze and drought, the Produce Terminal is expected to handle an average 2034 car and truck loads of produce monthly in 1952. This average is made up of 155 carloads of bananas, 182 carloads of tomatoes, 146 cars of potatoes, and 475 cars of mixed produce and vegetables with the balance made up of citrus fruits, cabbage, apples, and a variety of other commodities.

New Warehouse for Storage of Shelled Almonds



Outside view of new almond storage warehouse, California Almond Growers Exchange.

A CONCRETE and steel refrigerated warehouse has been completed by The California Almond Growers Exchange at Sacramento, Calif., costing approximately $350,000. The exchange is a grower-owned marketing association handling approximately seventy per cent of all United States-grown almonds. Its main plant is a five-story, block-square structure, valued in excess of two million dollars, and rated as the world's most modern and efficient almond "factory."

The building housing the new plant was completed in 1951 after nearly a year of research including a study of numerous plants throughout California. It is one-story, ground level construction, with foundation and structural members designed to permit the later addition of a second story. Four storage rooms are 65-feet square, each holding 2,000,000 pounds of shelled almonds at 35 F. Overhead 3-foot steel beams span the 65-foot rooms unsupported.

Refrigeration

Refrigeration is by an indirect brine system, 100-ton capacity. The building contains over 50,000 feet of pipe. Floors were poured over 6-inches of cork-crete. Forms used in pouring the walls were faced on the inside with a 2-inch sheet of cork, supplemented with an additional 2-inches applied inside after the removal of the form.

Fire protection is by a dry-type system. Air circulation is accomplished by the use of 12 Buffalo vane-axial fans, 28-inch, 1½ hp.

The building was designed and construction supervised by D. R. Bailey, Jr., in charge of the Exchange's engineering department, and built by the Associated Refrigerating Engineering Co., 2100 East Vernon Street, Los Angeles, Calif.

Poultry Institute Adds to Staff

THE Institute of American Poultry Industries announces that Frank C. Wollney has joined the staff of the Institute, effective June 1. Mr. Wollney was formerly extension poultryman at Iowa State College. He will work with Institute members and allied groups, to help develop and carry out field service programs, including quality promotion meetings, sanitation schools, regional Fact Finding Conferences, and merchandising aids.

A native of Illinois, Mr. Wollney served in the U. S. Army Signal Corps for 37 months. He received his B.S. degree in agriculture, majoring in poultry husbandry from Iowa State College, then joined the college staff as extension poultryman.

"This move will help the Institute expand its service to meet the growing demand," commented Cliff D. Carpenter, president of the Institute, "and it will make the Institute's work more effective and valuable for individuals as well as for industry as a whole."

April 30 Cold Storage Holdings

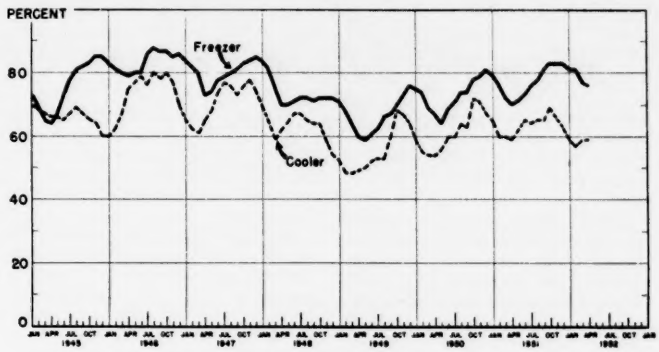
PUBLIC warehouse space utilization on April 30 was 59 and 76 percent for cooler and freezer, respectively. Cooler use was slightly above average for this time of year and freezer occupancy was 8 points above its respective 5-year average level. The seasonal change in freezer utilization — a drop of 2 points since March 31 — was only half the average April decline whereas in the case of cooler utilization no change was reported from the previous month. This compares with a normal 2-point increase in cooler occupancy during April, although last year a drop of 1 point was reported.

Availability of freezer space appears to be limited in all of the West North Central and Mountain states, Indiana, Virginia, West Virginia, North and South Carolina, Georgia, Tennessee, and Louisiana as freezer occupancy averaged 85 percent or better on April 30. City-wise, New York, Detroit, Minneapolis, and St. Louis reported both cooler and freezer occupancy to be near or above the 85 percent level, while other cities reported only their freezer space to be limited supply.

A decrease of 12 percent in cooler-held commodities during April brought total weight in store down to 1.2 billion pounds by the end of the month. Net out-of-store movements were reported in stocks of fresh fruits, canned fruits and vegetables, dried eggs, and pork. Total net withdrawals of the afore-mentioned commodities exceeded net into-store movements of dried and evaporated fruits, nuts and nutmeats, cheese, shell eggs, meat and meat products.

The overall April decrease in cooler weights totaled 165 million pounds which was greater than the average change for this time of year. Freezer-held foodstuffs reflected only a slight decrease from a month earlier. By April 30, total in store amounted to 2.2 billion pounds — a decrease of 28 million pounds since March 31. Stocks were almost half greater than average April 30 stores and were about a third larger than holdings last year.

Apples in storage by the end of April were down to less than 3 million bushels or about half the amount in store the previous month. Last year over 6 million bushels were on hand April 30 whereas average holdings for this time of year amounted to less than 5 million bushels. By April 30 pear stocks were reduced to 56,000 bushels. Stocks of other fresh fruits, potatoes, onions, and other fresh vegetables were in lesser supply by the end of April than in the previous month.



Occupancy of Refrigerated Warehouses, 1945-1952.

Net withdrawals of frozen fruits during April were a fourth greater than average — 45 vs. 36 million pounds — and by the end of the month national stores were down to 191 million pounds. Without exception, all fruit items showed seasonal

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Apr. 30, 1952	Mar. 31, 1952	Apr. 30, 1951	Five-year Average
Meat and meat products, lbs.	1,230,272	1,242,349	892,153	799,867
Lard and rendered pork fat, lbs.	88,786	70,803	75,171	117,620
Frozen poultry, lbs.	195,100	232,832	147,203	153,017
Creamery butter, lbs.	10,182	6,505	32,207	34,042
American cheese, lbs.	139,436	133,815	144,441	117,628
Other cheese, lbs.	14,635	13,996	19,893	17,169
Shell eggs, cases	2,185	1,596	973	1,781
Frozen eggs, lbs.	112,125	84,295	109,253	144,250
Apples, bu.	2,890	5,983	6,931	4,549
Frozen fruits, lbs.	190,802	235,653	207,764	211,366
Frozen vegetables, lbs.	311,643	348,023	272,111	225,937
Frozen fish, lbs.	113,228	113,996	88,803	76,248

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		Apr. 30, 1952 (%)		Mar. 31, 1952 (%)		Apr. 30, 1951 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	3,108	6,226	40	74	43	78	42	69	45	63
Middle Atlantic	34,383	35,780	56	74	54	74	56	68	51	64
East North Central	28,855	26,744	63	83	60	85	65	74	62	71
West North Central	8,321	16,176	65	90	64	91	64	84	68	79
South Atlantic	8,174	6,804	64	83	67	82	58	77	62	75
East South Central	1,978	2,823	62	84	67	90	66	77	71	79
West South Central	6,180	6,582	63	62	64	63	63	57	67	66
Mountain	1,451	2,469	74	87	79	89	67	79	75	73
Pacific	15,749	24,030	54	62	58	67	57	58	51	58
United States	108,199	127,634	59	76	59	78	70	59	58	68

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent Apr. 30, 1952		Mar. 31, 1952		Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent Apr. 30, 1952		Mar. 31, 1952	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	7	6	43	50	..	..	.....	.....	..	..	..	..
Middle Atlantic	1,452	1,305	32	56	36	57	1,839	255	62	79	247	85
East North Central	4,104	5,797	61	74	65	77	4,994	1,349	80	95	1,109	87
West North Central	408	1,944	58	63	44	51	9,950	5,135	89	95	3,979	90
South Atlantic	693	1,376	42	72	43	78	870	182	87	100	16	73
East South Central	.....	.....	..	..	..	..	350	114	99	89	70	100
West South Central	301	268	56	93	56	79	400	160	100	100	160	100
Mountain	108	209	94	81	29	84	205	107	92	100	.....	..
Pacific	2,976	2,878	19	34	24	35	2,235	401	88	93	284	93
United States	10,049	13,783	43	62	45	66	20,843	7,703	84	94	5,865	89

NOTE:—Blank spaces indicate that insufficient returns were received.

net decreases. The greatest was reported in stores of strawberries which were reduced by 17 million pounds during April, leaving 41 million in store.

Frozen vegetables totaled 312 million pounds on April 30 which compares with 272 million on hand last year and 225 million in store April 30 during the 5-year period ended 1951. Total holdings were reduced by 36 million pounds during April as all items except spinach reflected net out-of-store movements. Frozen peas led all others with a 17 million pound net reduction, followed by lima and snap beans with 8 and 7 million pound decreases. Spinach stocks increased during April by 11 million pounds to 38 million. Orange concentrate stocks increased to almost 24 million gallons as increases totaling more than 5 million gallons were reported during the month.

Holdings of cream more than doubled during April and by the end of the month, totaled more than 8 million pounds. Compared with last year and average, supplies were about two-fifths below 1951 and about a fourth less than average.

National holdings of butter totaled 10 million pounds by April 30 as compared with 32 million last year and a 34 million average. A less than average increase in cheese holdings brought national stores to 159 million pounds as only a net increase of 4 million pounds were reported during April. Average increase for this time of year was 11 million pounds whereas last year the April increase was 15 million pounds.

Although the into-storage movement of shell eggs during April was less than average and the increase last year, total stocks of 2.2 million cases were almost a fourth greater than average and more than twice the amount in store last year. East North Central storages held about a third of the national stores while about a fifth was in Pacific Coast facilities.

Seasonal increases in frozen egg holdings brought total in store to 112 million pounds which compares with last year's stocks of 109 million and average April 30 holdings of 144 million pounds.

The April net disappearance in poultry holdings was about average for this time of year — 38 million pounds — but when compared with last year's net withdrawals the movement was about a fifth less. Total stocks of poultry were 195 million pounds, of which 43 and 49 million were in Middle Atlantic and East North Central storages, respectively. Turkeys reflected a 20 million pound net reduction during April to total 73 million pounds by the end of the month.

The greatest amount of frozen pork ever produced in storage was recorded on April 30 when supplies reached 582 million pounds. The April net into-storage movement of 24 million pounds compares with a decrease of 5 million last year and the average April change of a 15 million pound decrease. Pork of all kinds totaled 824 million pounds which was about a fourth larger than last year's supplies and about 50 percent greater than average.

Not since 1944 has there been as much beef in storage on April 30 as was reported this year. Stocks of 241 million pounds compared with 111 million last year and 118 million on hand April 30 during the 5-year period ended 1951. Meats of all kinds totaled 1.2 billion pounds. Approximately two-thirds of the national total were reported in the East and West North Central regions as stocks were almost evenly divided. The Middle Atlantic and Pacific Coast storages each reported about a tenth of the total supply.

National holdings of fishery products totaled 130 million pounds, of which 113 were frozen fish. These stores were relatively unchanged from the previous month's supply but were 35 million pounds greater than average.

Storage Outlook

Public cooler occupancy failed to increase during April as the net movement of shell eggs and cheese into storage fell short of net accumulations last year and the average. However, cooler utilization was above average but equal to the 1951 level. During May the expected increase according to previous performance is 2 points. Cheese stocks should increase during May by greater amounts reported in April and with the continued movement into storage of shell eggs, occupancy may reflect an increase greater than average. Freezer occupancy has been above average each month during 1952 and by the end of last month exceeded the April 30 average by 8 points. The April decline of 2 points was only half the decline indicated by the 5-year average, and according to previous performance there should be little or no change in occupancy reported by May 31. A seasonal low of around 76 percent would be the highest since 1946 at the end of its downward cycle.

Canadian Holdings of Fruits and Vegetables

THE Dominion Bureau of Statistics, Agricultural Branch, reports the following commodities held in cold storage in April 1, 1952.

Apples in cold and common storage on April 1, 1952 amounted to 683,000 bushels as compared with 1,504,000 bushels March 1, 1952 and 1,881,000 bushels April 1, 1951.

Frozen fruit holdings in storages and factories April 1, 1952 amounted to 16,605,000 lbs. as compared with 18,607,000 lbs. March 1, 1952 and 12,539,000 lbs. April 1, 1951.

Stocks of frozen vegetables in storages and factories on April 1, 1952 amounted to 9,002,000 lbs. as compared with 10,116,000 lbs. March 1, 1952 and 9,457,000 lbs. April 1, 1951.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

Elliott Hallowell, Dallas, Tex.
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How to Keep Power Costs in An Industrial Plant at a Minimum

R. W. VAUGHN and L. H. HEYMAN
Memphis Light, Gas & Water Division
City of Memphis, Memphis, Tenn.

THE ever increasing inflationary spiral emphasizes the necessity for economy in American industry. Although electric power, particularly in this section of the U. S., is one of the few commodities that can still be purchased at prewar prices, the probability of increased power rates, overloaded lines and generating capacity requires conservation of available power.

Since we are to discuss "How to keep power costs at a minimum", a review of electric rate structures will lend a better understanding of the effects load factors, power factor, electrical demand, energy charges, etc., have on operating costs.

The first public utility service dates back to the ancient era when water vendors peddled the contents of goat skin bags through city streets. Their revenue depended upon barter on a cash and carry basis. Bridging several thousand years we arrive at the Electric Age, a more complex era, where horse power is piped into industry by copper conductors. The public utility revenue is no longer a result of barter.

As early as 1892, studies in rate theories disclosed certain elements of costs that rates were intended to cover, were entirely independent of electrical consumption. Supplementing the charges for "quantity", a system of "demand charges" was developed by utilities to embrace other essential costs.

The independent rate components, "consumption" and "demand", are illustrated by the following example. Two electric customers each use 10,000 kwhr per month. One has a maximum load of 20 kw, the other a maximum load of 100 kw. The utility's revenue on a consumption basis is the same for both customers, but obviously the connected load of 100 kw requires several times more investment by the utility than the 20 kw load. The "demand" part of the rates compensates the utility for the difference in their investment.

Demand on larger installations can be continuously measured without significant cost. On smaller installations, where the connected load does not justify the cost of continuous measurement, demands may be estimated by occasional test, or based on connected load, or be compensated by a different energy charge. The Memphis Light, Gas & Water Division continuously measures and applies demand charge to customers having demands of 20 kw or greater.

As refrigerating engineers you will find the basis for metering demands to differ with various utilities. "Accidental" or "Instantaneous" demands are seldom considered significant, as they do not affect the utility's investment, which is the cause of the demand charge. The measured demand is conventionally accepted as that prevailing over a predetermined period of time, which may be anywhere from 5 minutes to 60 minutes. Common practice puts the time interval at 15 minutes or 30 minutes. Some utilities may average the metered demands for several months to arrive at the billing demand for the immediate month.

Maximum Demand

A few power companies have contended that once a maximum demand has been established by a customer, that it is likely to be repeated, and that utility facilities must be permanently maintained for this maximum demand until a sufficient time has elapsed to prove differently. The maximum demand for a twelve month period ending with the current

An N.A.P.R.E. Convention paper

month is usually accepted as the billing demand by such companies who depart from the monthly basis of demand charges.

The Memphis Light, Gas & Water Division recognizes the necessary varied requirements of certain industries needing temporarily high demands and, because of the deversity of its customers, finds it equitable to use the monthly demand as a basis for billing. However, in cases of extreme variations of monthly demands, it is necessary to partially protect the investment for unused but available stand-by facilities. Such details are explained in the B-3 rate schedule of the Memphis Light, Gas & Water Division under the "Minimum Bill" paragraph. This paragraph is quoted:

Minimum Bill

Customers taking service under this schedule shall pay a minimum annual charge, including demand and energy, of six dollars ($6.00) per kilowatt of the highest measured demand occurring during any month of each year of service.

For annual customers, the excess, if any, of the minimum annual charge over the total amount billed to and paid by customer shall be determined and collected at the end of each year of service.

In no case shall the minimum monthly bill during the service period be less than fifty percent (50 percent) of the demand charge for the highest measured demand established during the preceding eleven calendar months.

For seasonal customers taking service for less than one full year, the minimum annual charge will be collected in equal installments during the first four consecutive months of service, and will be adjusted at the end of the service period, at which time customer shall pay the excess, if any, of the minimum charge over the total amount previously billed to and paid by customer. Seasonal customers shall pay in addition the actual costs of cut-in and cut-outs in excess of one of each per year.

Demand charges, as well as energy charges, are normally arranged in "block" or "step" type rates. As usage increases the rates of successive blocks decrease. Utilities have reached no general agreement for components of uniform blocks, nor the kw or kwh rates within these blocks.

Seasonal Industry

Seasonal industry, such as ice manufacturing, deserves special treatment. Unfortunately for the utility, ice manufacturing arrives at the same time as the extra requirements of air conditioning loads. Normally, seasonal customers are permitted one cut-in and one cut-off without additional charge. In the Memphis Light, Gas & Water Division's B-3 seasonal rate schedule there is a 2 mill extra charge for the first 10,000 kwhr, but compensation is made in the 4 mill block, so that a large energy customer using over 40,000 kwhr is not penalized. Because of electricity shortages, the so-called "dumping" or "off" peak" rates have disappeared.

Catalogues issued by the many manufacturers testify to the various kinds of watthour and demand meters. We can only pause to mention some of the popular types. For smaller loads, utilities use a combined indicating type of demand meter and a kilowatt-hour meter, frequently in the same housing. The demand register may operate from gears or from an independent thermal element. A maximum demand of a predetermined interval will indicate on the meter until reset at the reading period. On a cumulative demand meter, the previous reading is subtracted from the present reading to arrive at the monthly demand.

Larger power installations require recording demand meters. The kilowatt hours are indicated as usual on a counter dial, but the integrated block interval demand is recorded on a chart. Besides affording a permanent record, the time and magnitude of each interval of demand is recorded.

Impulse Recording Demand meters are impulse-controlled receiving instruments designed to totalize the integrated demands of two separate circuits where accuracy and amounts of loads are of sufficient importance to warrant a metering system of the highest type.

Prior discussion has been limited to rate structure, electric energy charge (kwhr) and demand charge (kw). One means of keeping power costs at a minimum is to carefully control demands within any one time interval of the demand block. Because motors draw extra energy during starting, keep to a minimum the number of motors started during the same demand interval. When possible, scatter the use of auxiliary motors that operate at infrequent periods, so that only a limited quantity will be concurrently on the line. Every practical engineer knows the peculiarities of his own plant; these must be analyzed and watched. Once a reasonable maximum demand has been reached for any billing period, this demand should never be exceeded through carlessness. Haphazard methods cost demand dollars.

In addition to energy and demand charges, many utilities have "power factor" clauses in their power contracts. Special metering equipment requirements of such a clause will not be discussed, but we do want to outline a few evils of low power factor and how they affect you. Penalties may be very evident, such as direct payment of dollars to the utility. Like some taxes, penalties may be hidden, concealed in the heat losses (I^2R) of your installation, extracting payment in unacountable kwhr.

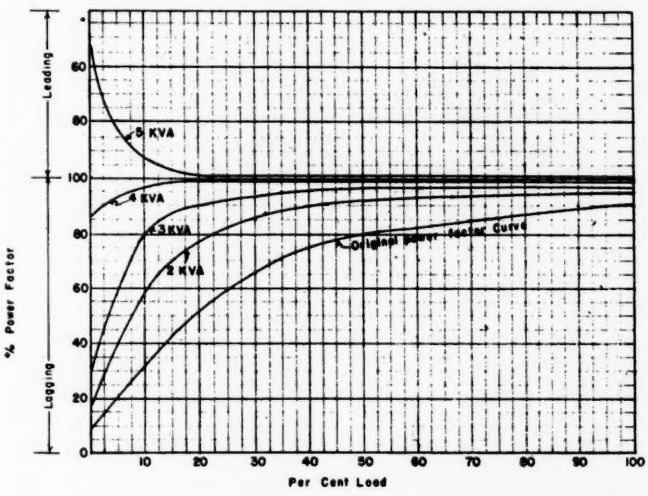

Fig. 1—Load-Power Factor Curve, typical 15 hp squirrel-cage motor, 1800 rpm, 220 v, 60 cycles. Original power factor curve and effects of capacitors on power factor.

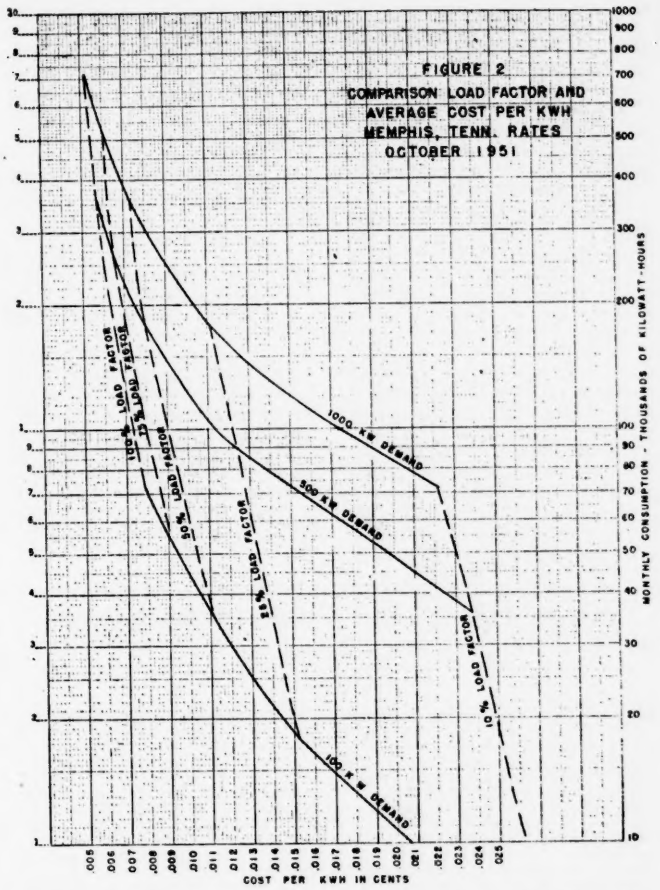

Fig. 2—Comparison load factor and average cost per kwh, Memphis, Tenn. rates October 1951.

Kilowatt billing does not take into consideration the reactive volt-amperes which load up the utility's lines and equipment just as it does the consumer's lines. When this non-paying load exceeds the tolerance set by the utility's normally 85 percent power factor, the consumer is expected to compensate the utility on this basis. Assuming a base power factor of 85 percent, and an actual power factor of 60 percent for a measured 120 kw demand, then

$$\text{Billing kw Demand} = \frac{.85 \times \text{Measured kw Demand}}{\text{Actual Power Factor}}$$

$$= \frac{.85 \times 120}{.60} = 170 \text{ kw}$$

If the demand charge were $1.00 per kw, the consumer has paid a penalty of (170-120) $50. This monthly cost would not take long to pay for installation of power factor corrective equipment.

Also it is safe to assume that the consumer's plant wiring has not been designed for low power factor operations. Suppose a motor draws 100 amps from the line at 60 percent power factor. Only 60 amps produce horsepower and 40 amps are reactive current. The line losses increase as the square of the current (I^2R). Besides overheating the circuits, the consumer is also paying for the kwh occasioned by these line losses.

The major cause of low power factor in industry is the squirrel cage motor, often used because of its lower initial cost. All induction motors or inductive devices require magnetizing current or kilovars, which perform no useful work. Even at 100 percent load, the power factor of any induction motor is inherently low as compared with closed magnetic circuit apparatus, such as a transformer. At light loads the motor power factor becomes worse. Fig. 1 illustrates the variation in power factor with load.

Capacitors in industry are a practical and inexpensive solution for power-factor problems. They are simple devices enclosed in a housing containing only metal foil, paper and an insulating liquid. Capacitors furnish leading kilovars which neutralize an equal amount of lagging magnetizing requirements of the inductive device.

It is common practice to install capacitors to each motor so that they may be switched on and off by the motor starter. Preferably, the capacitors are placed on the load side of the motor overload relay if the overload relay is rated on the basis of the reduced line current due to the capacitors. This connection has the advantage of reducing the short-circuit current due to the impedence of the overload relay.

When it is desired to correct the power factor of a number of small motors, capacitors may be connected to a circuit on the line side of the multiple arrangement of motor starters, or capacitors may be connected to the main bus. Generally speaking, the closer to the load the better the overall advantages of capacitors.

Experience has shown that only when too much capacitance is connected to the load side of a motor starter switch, are difficulties encountered. Limiting factors are (1) overvoltage due to self-excitation and (2) transient torques. When a running motor is disconnected from the line, too large a capacitor bank supplies motor magnetizing current, causing the motor to self-excite and become a voltage generator. High voltage and motor stalling may result. Use of capacitors should be properly engineered.

Power factor can be controlled by the use of synchronous motors which may be operated with unity power factor or leading power factor if desired. Induction motors costs increase more at decreased rated speed than do synchronous motors. Even when initial cost is an item, synchronous motors find favor, especially for slow speed applications. You will recall that at half load or quarter load inductation machines have an exceedingly low power factor, while synchronous motors have reverse characteristics.

After all, the purpose of power factor discussion has not essentially been methods but rather the advantages of correcting low power factor. These advantages add up to keeping operating costs at a minimum because of

a.—Savings in power bills where power factor is an incentive.

b.—The release of system capacity for other use.

c.—Reduction of power losses by lowering current in established circuits.

d.—Motors operating cooler and attaining longer life.

e.—Higher voltage and higher efficiency.

Another means whereby the industrial engineer can materially reduce his power costs is by increasing his load factor. Load factor is the ratio of actual kwhr consumed to the maximum kw demand multiplied by the hours in the month (usually 720 hours). This can be expresed by the formula:

$$\text{Load Factor} = \frac{\text{Actual kwhr consumed}}{\text{Maximum kw demand} \times 720}$$

Let us assume an example or application of this in one of your plants. Suppose you have a unit that operates 8 hours per day and turns out a given amount of ice. For the purpose of this example let us assume that this plant requires a 60 horsepower motor and operates continuously throughout the 8 hours. That would require 60 x 8 x 30 = 14,400 kwhr per month. On our B-3 rate this would cost 1.4 cents per kwhr. If this same plant could be redesigned to operate 24 hours a day with a demand of 20 kw, the cost would only be 1.08 cents per kwhr. The savings in the monthly bill would be $46.00 or 23 percent. The load factor in the case of the 60 horsepower motor was 33⅓ percent and with the 20 horsepower motor was 100 percent.

Fig. 2 is a graphic illustration of three diferent billing demands, demonstrating the cost per kwhr at different load factors. Since kwhr is the work producing part of the electric rate structure, economy dictates that the unit cost per kwhr be held to a minimum. Load factor is, in a sense, a measure of the efficiency of utilization of your electric power equipment.

All prior analyses of power costs have been aimed more directly at consumers savings based an utility's rate structure. Other power savings have been mentioned and these will now be explained more fully.

Because the losses in a circuit vary as the amperes squared (I^2R), it is good practice to keep the amperes at a minimum. The kva of a circuit is a product of volts and amperes, if the voltage is doubled the amperes are halved. If a 240 volt motor drawing 50 amperes at unity power factor were replaced with a 480 volt motor of the same horsepower, the burden would only be 25 amperes. Assume the total resistance of the wire from the bus to the motor to be .3951 ohms at 20 C, the savings in line loss would be 740 watts. Where plant facilities permit, higher voltage-rated equipment will spell plant economy in critical material and costs.

Another example of line losses is found in the temperature of copper conductors. Over a moderate range of temperatures such as a difference of 212 F, the change in resistence of copper wire is proportional to the change in temperature. For example, if No. 6 wire at 68 F has a resistence of 0.3951 ohms per 1000 feet, then at 122 F the resistence is 0.4416 ohms. Assuming a current of 50 amperes in each of two 1000 foot circuits, the wire in one operating at 68 F and the other at 122 F, losses of the higher temperature circuit will be 126 watts greater. Occurring over a continuous period of 30 days at a cost of 6 mills per kwhr, this 1000 feet of wire alone would increase operating cost by $5.46.

Line losses mean voltage drop. Low voltage means inefficient, hot motors. Hot motors mean shorter life.

Summary

To summarize on how to keep power costs at a minimum we recommend

1. Hold maximum demand as low as possible.
2. Maintain a high power factor.
3. Keep load factor up.
4. Work motors at 100 percent load and voltage ratings.
5. Eliminate excessive line losses.

While this paper has dealt primarily with the fundamentals of reducing power costs, it is realized that the cost and scarcity of materials may make is impracticable to utilize all the corrective measures outlined. You as practical refrigerating engineers are in an ideal position to analyze these factors and apply them to the best interest of the individual installation.

News Notes and Chapter Activities

Los Angeles

FRED HERR

PREDICTED trends in water treatment methods was the subject discussed at the educational session of the May 7 meeting of Los Angeles Chapter, NAPRE, in a collaborative presentation by Robert Savage of Water Chemists, Inc., Los Angeles, and Gordon Schoemaker, district manager of Calgon, Inc., and Hall Laboratories, Inc.

The talk by Mr. Shoemaker was divided into two parts: Water treatment principles; and recirculating of cooling water systems. A general discussion, with questions invited from chapter members followed. Mr. Savage was discussion leader and was called upon to supply technical answers to a score or so of questions.

Mr. Shoemaker opened his talk by making three predictions about water treatment:

1—There will be more know-how by the operators, with more true chemistry and less guess work in water treating.

2—With less water available in the future, we will use that water more by recirculating it.

3—More and more consideration will be given to the steam problem and ways and means of keeping boiler circulating systems free from sludge and other adhering matter.

Mr. Shoemaker presented a detailed and technical outline of what refrigeration engineers should know, and, he emphasized, that water should be treated properly to prevent boiler degeneration. Alkalinity and its affect on water, and the various compounds and chemicals available for preventing hardness of water were discussed, as was also the method of preventing sludge from adhering by the use of a dispersing element.

"The important point for refrigeration and power engineers who deal daily with boiler water to remember," Mr. Shoemaker said, "is to get the knowledge of proper water treating methods, and then use that knowledge in their plant by introducing the correct chemicals into the boilers to produce results."

There were forty-five members present when President Edgar M. Marrs tapped the gavel to open the business session. Among the guests, and greeted as an old friend by Los Angeles members, was LeRoy Edsel of San Francisco, engineer of the Pacific Fruit Express, member of San Francisco Chapter and a director of the national association.

President Marrs inducted four new members: Joseph Demark, Jr., and Troy Dee Sharp, Ventura Frozen Food Farms, Inc., Oxnard, Calif.; Donald H. Kitts, Terminal Refrigeration Co., Los Angeles; and Roderick E. Riston, self-employed.

Although he claimed that ICE AND REFRIGERATION "put him on the spot" by referring to him in the March issue report as "The Man To Beat" in the chapter's 1952 golf tournament, Golf Committee Chairman Frank Eccleston reported that the substantially larger field of entrees this year, with some mighty good golfers enrolled, might prove the ICE AND REFRIGERATION statement to be an erroneous rumor. He revealed that a minimum of 30 golfers would tee off at the Montebello Golf Course. Mr. Eccleston and Rudi Kettler were named the handicap committee.

Ed L. Nelson of the Union Ice Company, chairman of the entertainment committee, presented a report of the excellent program his com-

mittee has arranged for the chapter's annual Old Timers' Night on June 18. Here's what Empresario Nelson has arranged:

6 p.m. Social hour, with group singing, if the inclination runs that way.

7 to 8 p.m. Cold plate dinner.

8 to 8:30 p.m. Introduction of old time members.

8:30 to 9 p.m. Presentation of trophies to winners of the May 25 Golf tournament.

9 p.m. Comedy film, followed by a floor show.

Rudi Kettler reported on a contemplated deep-sea fishing trip—which, if captain and boat prove suitable after further inspection, was to be held on some Sunday in the near future, with take-off from Los Angeles Harbor. Ten members indicated their desire to join Rudi in the expedition after yellowtail and tuna.

The April 16 meeting was featured by a talk by William F. Finnegan, president of W. J. Finnegan Company, Los Angeles. Mr. Finnegan has been a member of Los Angeles Chapter since 1926 and for many years has been active on the National Operating Data Book Committee. His talk dealt with engineering and biological aspects of preserving food by freezing. In his preliminary discussion he touched upon some correspondence he had had with a Japanese research engineer which research has important bearing on concepts of food freezing, Mr. Finnegan pointed out.

The speaker explained that his own research had revealed that frozen rain drops actually are hollow spheres with unfrozen interiors. He was gratified to learn, he said, that his contacts with the Japanese scientist revealed that that man had reached practically similar conclusions.

Mr. Finnegan devoted a considerable part of his talk to problems pertaining to preserving food by freezing. The distribution of air over the surface and heat transfer are the important factors in freezing. 'Quick Freeze' was a useful phrase in a sales promotion way in that it drew the public's attention away from the old time cold storage food. But it has no meaning from an engineering standpoint. He then presented a resume of the conventional methods of food freezing which, he said, are being used by well over 90 per cent of all frozen food producers.

His comment, supplemented by slides, dealt with static food freezing by contacting one broad side of the container; horizontal static food freezing by contacting both broad sides of the container; vertical static food freezing by positioning the containers on end or edge and contacting both broad sides; static food freezing; and active food freezing by rotating the containers under external pressure during the freezing process.

"The characteristics of foods, containers, confined static air pressure and moisture vapor pressures," Mr. Finnegan said, "have been related but there remains the important food freezing phase to consider. No one method of handling the various kinds of foods and containers during the freezing process is sufficient within itself to bring about the most desirable end results in each instance. However, it is both practical and economical to utilize an efficient low temperature heat exchanger wherein the foods and container handling facilities may be changed as required to produce the best and most desirable freezing results in all cases by merely changing the food handling adapter within the freezer to one which embodies food handling facilities best suited to fill particular requirements."

Forty-eight members and guests were present at this meeting. The door prize was won by Elmer J. Hunyada of the Aero Jet Engineering Co., Azusa, Calif., who donated a handsome portion of the prize to the coffee and doughnut fund.

Inducted into membership were Victor Quinn, Terminal Refrigeration Co., Los Angeles; Donald Filkins, Anheim Citrus Corp.; and Gordon Clark, who assumed company chapter representation for the Commercial Sales Co.

W. R. Burnett chairman of the membership committee reported himself as not too elated with results thus far. He estimated that Los Angeles would need at least a total of 100 new members to make a serious bid for the championship this year. He implied that some "holding back" was taking place, on the part, possibly, of San Francisco, Chicago, New Orleans or Dallas Chapters, who are, according to Burnett, "trying to lull Los Angeles" to slowing down by not revealing their true totals at this time. Some one of those four Chapters is going to dump a whole fist full of new member applications at the last moment, and we must be prepared for the moment when the "boom is lowered."

Mr. Burnett implied that he suspected those Texans down in Dallas of preparing a boom for lowering on his personal head. "I used to hang up my hat in Dallas," he pointed out. "Those Texans would love to scuttle us Southern Californians. So, let's rig up a good-sized boom of our own."

The Chapter's fishing enthusiasts have gotten an early start. Rudie Kettler of Fairbanks Morse Company, Herbert Royden of the Royden Ice Company, and Jim DeLorre composed a threesome which recently motored down for some bass fishing in the Gulf of California near Guaymas, Mex. Biggest catch was a 100 pound pinto bass which Royden landed after a 60 minute battle.

Another recent piscatorial expedition saw Kettler and Charles Lacy, Los Angeles golf pro, journey to San Felipe, Mexico, on the Gulf of California. The waters there abound with white sea bass, sail fish and totoda, a black bass. Kettler and Lacy stopped at Mexicali, on the border, to play a round of golf on the only links in the world located in two countries. Half of it is in the United States, half in Mexico.

Memphis

CHARLES CONLEY

AT THE second April meeting H. L. Todd the chapter's instructor continued his lecture on the King Refrigeration Course. The lecture dealt with the various types of evaporators and coil designs. Mr. Todd used the blackboard to illustrate.

William Hartnett, manager of the local sales office of The Fiberglas Corp., showed a motion talking picture. It showed the installation of Fiberglas AE installation board by the American Bitumuls and Asphalt Company's Laykold Adhesives method in the insulation of the big freezer plant for the U. S. Government at San Francisco. Mr. Hartnett also had several types of Fiberglas products on display and talked on their application and uses. After the meeting cold drinks were served to the group in attendance.

We welcomed to membership John Stroupe, assistant engineer Ford Motor Co., and Euris McKnight assistant engineer of Hotel Peabody.

At the first meeting in May H. L. Todd continued his lecture on the Refrigeration Course. The various types of compressors were covered and Mr. Todd explained how to use an indicator card and how volumetric efficiency is figured from the card.

Because of the very late start on the King Refrigeration Course the chapter voted unanimously to continue the educational meetings through the summer and not recess the educational meetings during June, July and August as we have always done in the past. This certainly shows that great interest is being shown in the course.

St. Louis

H. B. SUTER

ST. LOUIS Chapter as usual held their regular meeting at Ranken Trade School. After the business meeting Dick Vail of Taylor Instrument Co. showed a new sound film entitled "Information at Work." This was a very interesting film showing many temperature and pressure recording and control instruments, how they were made and some of their applications. The entire group then took part in a question and discussion period with Mr. Vail as answer man.

We are having one meeting a month as an entirely educational meeting. The NAPRE Refrigeration Course and our capable instructor have made this meeting so interesting that our membership has been increasing all year.

Help! Help!
Help! Help!

NO ONE likes to work during the summer season but this is an appeal from the National Office. Word has been received from several chapters which ordinarily recessed for the summer months that they plan to continue their educational meetings throughout the summer. This is due to the great interest that is being shown in the Guy King Refrigeration Course. Please send us reports of your chapter activities for inclusion in this column. These reports will stimulate the interest of those who do not attend the meetings. They will realize what they are missing and will make it a point to be regular attendants. Regular representation in this column is good publicity for your chapter.

N.A.P.R.E. Department

Colton

H. O. Bonter

THE chapter suspended the regular meeting night of Wednesday the 14th to accept an invitation by the Arrowhead Chapter R.S.E.S. to join them for an evening's entertainment on May 13. The subject for the evening was a talk illustrated by colored pictures (news about "Freon") by E. I. du Pont de Nemours & Co. after which a spectacular demonstration was given the group.

It was very interesting to see the handling of Freon and how it acts under different conditions. Freon being a nonflammable and nontoxic refrigerant is safe to handle except in a closed room. When working with large quantities of Freon in a closed room, there should be plenty of fresh air circulated through the room as the Freon shuts off the oxygen and one cannot breathe without it.

After the talk and demonstration the group enjoyed light refreshments.

Stockton-Modesto

H. C. Dyer

OUR last meeting was held at the Union Ice Co. in Stockton. In the business portion the chapter's contribution toward the Emerson Brandt Memorial was taken care of. President Carlson's letter was read in connection with securing local ads for the Operating Data Book. Those present at the meeting indicated that they would make every effort to obtain some ads for the 1952 book.

We are having good attendance at our meetings. Everyone is interested in the Refrigeration Course and we expect increased attendance as our study of it continues.

N A P R E
Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating problems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

Oil Pumping

Question No. 919: Which of three compressors pumping 3-stage on F 22 suction 27 in. vacuum first stage, suction 17 in. second stage, suction 35 lbs third stage and 170 lbs discharge pressure would tend to pump the most oil?—J. W.

Answer: This is a question to which it is difficult to give a straight answer. There are no two low temperature jobs which will operate the same in theory or practice. Expectations would be the lower the suction the more oil would be pumped. In other words one would expect the compressor with the lowest suction pressure to pump the most oil. In practice this is not so. There may be times when the low or high or intermediate compressor may pump the most oil. This all depends on the condition of the suction gas coming back to the compressor because regardless of the type of evaporator feed control there may be times the gas may be returning in a wet condition and working down into the crank case which will help foam up the oil and, in turn, the foam helps to pump out the crank case. — E. R.

Detecting Ammonia

Question No. 920: What is the simplest and best way to detect the presence of ammonia in calcium brine?—C. W.

Answer: To detect the presence of ammonia in calcium brine, take an ordinary glass or cup, fill it about one-half full of the brine to be tested. Add a very little caustic soda, preferably granulated. Allow the caustic soda to dissolve and mix well. (If a white precipitate forms, it will do no farm.) Then cover the glass or cup with a small piece of sensitive paper moistened with water. Such paper is usually furnished in booklets by ammonia manufacturers. The test paper must be white when put on and must not come in contact with the brine and caustic soda mixture.

If the brine contains ammonia, the test paper will turn red from the vapor. If the glass is placed in warm water the reaction is hastened. It is, of course, necessary to do the testing in a room which is free from ammonia. For very small quantities of ammonia, the reaction takes a little time. If the paper remains unaffected after five minutes it can be concluded that the brine is free of ammonia.

The chemical or sensitive paper usually supplied by the ammonia manufacturers is commonly called phenolphthalein paper. This paper may be prepared as follows: Dissolve one gram of phenolphthalein in one liter of weak alcohol; then immerse in this solution strips of soft chemical filter paper. The paper is then hung up to dry, after which it is ready for use. — From Practical Ice Making by Authenreith and Brandt.

Controlling Humidity

Question No. 921: What is the best way to control humidity in an egg storage room?—E. M.

Answer: The major problem of controlling the humidity in an egg storage room is that of replacing the water vapor which has been condensed out of the air onto the coils. Seldom is it necessary to reduce the water vapor content of the air. Air at 30.5 F. and 90 per cent relative humidity, which is considered very good for egg storage, has a dew point temperature of 28 F. This means that, if the surface temperature of the pipe is lower than 28 F., moisture will condense out of the air surrounding it, and lower the relative humidity. A coil surface temperature of 28 F. would necessitate a refrigerant temperature within the coil of approximately 27.5 F. In other words if the ammonia evaporating temperature were 27.5 F., corresponding to 41 psig there would be no condensation of water vapor from the air. But this would require from 3 to 5 times as much pipe coil as is ordinarily used in an egg room, because the temperature difference between room air and refrigerant is only 3 degrees, whereas a 15 degree difference is ordinarily used. In order to save pipe we expect to dry out the air in the room and add more moisture as occasion demands. This is done with special atomizing humidifiers.

J. R. Shoemaker in answer to Question No. 638 told how they raised the relative humidity in their egg rooms at the Elmira (New York) Refrigerating Co. Their atomizer consists of a ten gallon, heavily insulated tank, mounted on a wheel barrow horizonal chasis. This is filled with hot water. At each end of this tank is a special atomizing Parks-Cramer nozzle, with connection provided to compressed air lines which run throughout the rooms. Practically all atomizing takes place in the center aisle so that the spray is picked up by the air circulation coming out of the discharge duct. Muslin screens are provided to prevent the spray from striking directly on the cases. Their temperature range for eggs has been 30 to 31 F., with the emphasis on holding as close to 30 and 30.5 as possible with a relative humidity of 88 to 90 percent. Complete circulation of air is provided around all cases by proper spacing and piling of the crates.

For full details please refer to answers to questions 637 and 638. These were published in the August, 1944, issue of Ice and Refrigeration and in the 1945 NAPRE Data Book.

We expect to have a good paper by D. D. Wile on the maintenance of high relative humidities with extended surface soils at our National Convention in Dallas, November, 1952.

I doubt if there is a best way of controlling humidity. A system best suited for one plant may not be best for another. It seems to me that a good way would be to add steam instead of atomized water. — H. G. Venemann.

ANSWER No. 2: There are many ways to control humidity in an egg storage room. Out of six operators, each may have a different way of doing it and each, to his satisfaction, may be the best way. The refrigeration or suction should be set with a 10 F split between the refrigerant temperature and room temperature, thus keeping dehydration down to a minimum and humidity at its highest point. To increase the humidity each way can be controlled with a humidistat which will turn on or off the controls to add moisture, or add heat whichever one may be required.

To add moisture, there are on the market today many fine pieces of equipment which will vaporize water or steam into the room air, such as fine atomizers which turn water into a fog by air washer units, and some small home made units similar to a furnace-type unit.

To reduce humidity add some heat to the room by electric blower unit or strip heater or steam, hot water or hot gas. This added heat will call for refrigeration which, in turn, will pull down the humidity.

If E. M. is interested in further information, let us know the type of room, size, type of refrigeration, temperature desired, pipe coil, air unit, etc.-E. R.

Mixed Brine Reading

ANSWER TO QUESTION *917* (See May issue). I believe Mr. Wlyde has the correct method of getting out of his difficulty by changing over to all salt. He would also get out of his trouble if he changed to all calcium chloride. We never recommend that a plant be run on part NaCl and part $CaCl_2$ as the specific gravity readings tell nothing as to the exact freezing point. Also, with certain percentage compositions of $CaCl_2$, addition of more salt will not change the solution as the salt is no longer soluble in that composition.

Also, when using salt which has a minimum freezing point of –6.3 F (23.5 percent NaCl) the temperature of the ammonia should not be carried below –5 F so as to give an operating leeway. When using $CaCl_2$ and an ammonia temperature of –0.5 F, the $CaCl_2$ should be of a specific gravity at 60/60 of 1.218 with F.P. of –11.9 F to give an operating leeway.—Wallis R. Bennett, Chem. Engr. Lab., Dow Chemical Co., Midland, Mich.

New Questions

Leak in Condenser

Question No. 922: A few days ago, a double tube ammonia condenser at a local packing house developed a leak, with the result that ammonia vapor or liquid was introduced into the city water mains for about a block on either side of the plant. The water supply in that area was contaminated to such an extent that it had a very strong ammonia odor and turned a very dark color.

City officials of water and health departments are very much concerned, and are trying to develop some means of preventing a recurrence of this cross connection. They had representatives at our last monthly meeting and the problem was discussed at some length.

As a temporary measure they have recommended a check valve be installed in feed water lines to all condensers other than the evaporative type. This in my opinion would not be effective to any great extent. A supply tank, vented to atmosphere, and feeding water to condenser by means of a pump, with proper controls and water failure cut-out was also suggested.

Water pressure in city mains varies from about 18 psig to 95 psig, and there are plants in locations supplied by these and intermediate pressures. We would appreciate it very much if you could help us answer the following questions:

(1) Has this type of accident ever happened elsewhere, and if so, what was done to remedy the situation?

(2) Do you know of any device that would prevent this absorption of refrigerant, other than the evaporative condenser?

(3) What are the effects on water if this condition developed with Freon 12, methyl chloride or carbon dioxide?

We are of the opinion that no system is entirely foolproof as long as refrigerant and water are contained in the same vessel such as a shell and tube condenser, and connected directly to the main. However, any suggestion or information you may have to offer may be of great value to us in satisfying the authorities that these machines are made as safe as possible. —R.P.M.

Changing to Full Automatic Operation

Question No. 923: I have a problem; my company talks of changing from hand operated expansion valves to full automatic.

This plant is a 250 car storage with apple packing, cold storage and shipping business. The refrigeration is direct expansion ammonia, an ice tank of 108—300 lb cans, 2,535 ft of 1¼ in. pipe submerged in salt brine, two story building about 1000 ft long, by 26 to 40 feet wide. Old style hairpin coils are in the rooms; some on the walls, some are semi-flooded ceiling coils. The flooded coils have ten pipes wide fed into the bottom headers, piped to the other end of the room and back with the pipe parallel (i.e.) bends with ten inch centers would have ten inch centers at the headers. These headers have connecting pipes to recirculate slop-over.

If I control the ceiling coil with a Sporlan thermal valve, and a dry expansion wall coil with a thermal expansion valve, with a magnetic liquid valve, on a room thermostat, ahead of the two thermal valves, and a combination magnetic back pressure suction valve behind the junction of the two coils, where do I put the thermal bulbs? Suppose the ceiling flooded coil has 666 ft of two inch pipe, and the dry wall coil has 1,552 ft of two inch pipe, would this work?

Another example: A room has two flooded ceiling coils each 1,504 ft of 2 in. pipe, the dry coil 940 ft of 1¼ in. pipe.

Another example: One flooded ceiling coil 1,624 ft of 2 in. pipe, one flooded ceiling coil 1,160 ft of 2 in. pipe, and one dry wall coil 1,154 ft. of 2 in. pipe, and one dry wall coil 892 ft of 2 in. pipe, could I combine the two dry coils on one thermal valve?

We have plenty of heat to evaporate all the liquid we can take through 33,350 ft of 2 in. pipe plus 10,360 ft of 1¼ in. pipe, plus three 15 ton Baker units, and recondensed with 46 degree water, with pressure raised from 15 lb gage to 125 lb gage, with one 9¼ x 9¼ at 255 rpm, one 8 x 8 at 241 rpm, one 7¼ x 7¼ at 245 rpm, and one 6 x 6 at 220 rpm, during a receiving period of one month beginning the last of August, thereafter our load and compressor needs taper off to the 6 x 6 at 30 lbs and 100 lbs the first of January.

Our present required refrigeration is 5½ tons of ice, and one ice storage 58½ ft x 35 ft x 12 ft on one dry coil, 1,020 ft of 2 in. pipe, and one dry coil 847 ft of 2 in. pipe. The dry coils will be changed to bottom feed. We want to operate up to 2000 ft of 2 in. pipe on one thermal expansion valve to save extensive rebuilding of our dry expansion wall coils.

My N.A.P.R.E. class-instructor told me that 1,000 sq ft of pipe surface is

close to the limit for maximum capacity on coils fed by thermal valves. Would the application of Sporlan valves throughout enable me to feed 2000 ft of dry coil? I have been wondering what would happen to the multiplexed coils when they are of different volumes, as all coils in one room would be in front of a back pressure valve. I have heard a number of opinions on this, so I am asking you for the real "low-down."—E.J.B.

Clarification of Brine

Question No. 924: We have two ice tanks, a 50 ton and a 20 ton, both tanks have calcium chloride brine treated with the usual percentage of sodium dichromate. Normally we hold a specific gravity of 1.19 and a pH of 7-8 to 8-0, with no corrosion problems, testing brine every week, taking particular care to hold the pH and density to the above figures. During the first three months of this year, I was on the mainland and when I returned the first thing I did was test the brine, and found the 50 ton tank brine had a pH of 7.4. We added one ton of calcium and raised the pH to 7.6. After the calcium was added, the specific gravity was 1.20, so we could not add more calcium to raise the pH and decided to add caustic soda (technical grade).

The brine in both tanks was a perfectly clear amber color. We made a solution of 2 pounds of caustic to 2 gallons of water. When this solution was added, the brine became cloudy. Then I tried putting the caustic in a wire basket and suspending in the brine at the point of fastest flow, this 10 pounds congealed and would not dissolve after being left in the tank for one week. We then tried a solution of commercial grade caustic with the same results, not adding sufficient to raise the pH. We then consulted three chemists, samples were taken and tested, and it was found the only way they could clarify the brine was by changing the pH to below 7.0, but as soon as the pH was changed to the alkaline side the cloud appeared again. None had the answer to the problem of how to raise the pH without clouding the brine. The brine in the 20 ton tank had a pH of 7-4 and I tried to raise the pH by adding ammonia. The results were the same as adding caustic. We now have both tanks with cloudy brine and would like to know how to clarify this brine, also if there is anything that can be added to a clear brine to raise the pH without clouding? W.E.W.

Membership Chairman Speaks – Members Must Help Line Up Prospects

THE most encouraging fact in our Association activities is that we are accomplishing something! We are growing in membership strength and are having a fine fellowship and experience through our new lecture course. Everywhere I hear favorable comments about what we are gaining through our training course.

No limit of time, effort and painstaking care has been put into our lecture course by Guy King to make it worth-while. It requires an organized group to bring these benefits to us. Over 40 years ago a forward looking group of men just like ourselves recognized that by banding together they could accomplish things they couldn't do individually. They banded together to learn something. There is no difference 40 years later.

There is one dynamic thing which is vital. We must be big enough to accomplish our aims. That is the sole reason for my accepting the challenge as your National Membership Chairman. One thing is sure. If we let our strength in membership wane, we're a dead duck. We will not admit to that!

Individual Work Is Necessary

This brings me to the point of all our efforts. You and only you can make the N.A.P.R.E. tick. I mean you individually. We must, each one of us, find, sell and bring into our splendid Association everyone near us who also is interested in improving himself. That opens a great field. Just look about you. YOU can make this thing go by determining right now to start talking N.A.P.R.E. You have so much to talk about. Even to invite your prospect to a chapter meeting will start the ball rolling. Nobody can substitute for you!

It's worth a great amount to you to have the N.A.P.R.E. survive. No organization is fully alive unless it is growing. We've made a great start. However, we've only started. There's a lot of finishing yet to be done. My committee and I have been doing our best, but we need the weight of your support. Each of you bringing in just one new member would double the size of our group. I know you can do even better than that.

Now is the time. Right now! Call the prospect down the street this minute. We get nowhere by procrastination. In fact, putting if off kills the deal. Hit the deck!!

HOWARD PETERSON
Chairman Membership Committee

Milwaukee Council Studies Refrigeration Code

THE Common Council of Milwaukee, Wis., has under consideration a chapter for the building code which would make it necessary for a special permit for the installation or alteration of commercial refrigeration equipment. Such a chapter, it is reported, will be opposed by the dairies, breweries and other industries in which refrigeration plays a large part.

A. A. Silverman, president of the Viltei Manufacturing Co., makers of refrigeration equipment, charged that the ordinance was "high handed and dictatorial" and would give police powers to the building inspector that would "open the door to fraud and corruption," according to the Milwaukee Journal.

The proposed chapter contains most of the provisions of the state refrigeration code but makes significant additions. One provision would empower the city building inspector or his deputy to arrest anyone who violated the ordinance. Another would give the building inspector the right to order the removal, for inspection purposes, of any partition blocking access to a refrigeration system.

Only one supporter of the proposed code appeared. He was Elmer P. Mayer, representing local 601 of the Steam Fitters Union.

The code committee decided not to recommend adoption of the code. Gustav Janzer, committee secretary, said that the chapter would be sent to the building and grounds committee "for further instructions on just what the aldermen want us to do."

Refrigerator Sales In Canada

AN ICE dealer in a small Canadian city reports 21 refrigerators sold in a two weeks' period. Another ice dealer in a small town reports six sold in one week. Many other ice dealers are having similar experiences and it's due to smart merchandising and a keen sense of what the public wants. One ice dealer's plan is to raise the selling price of the new refrigerator considerably and offer a large trade-in allowance. Another plan is to place the refrigerator in the prospect's home for 30-day's free trial—Canadian Ice Association Bulletin.

THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE INDUSTRIES

Executive Offices
1706 L St. N. W., Washington 6, D. C.

Executive Secretary
Guy W. Jacobs, Washington, D. C.

President
Wm. J. Ayers, Memphis, Tenn.

First Vice-president
Paul H. Andres, Oklahoma City, Okla.

Second Vice-president
E. L. Gunn Jr., Atlanta, Ga.

Treasurer
Geo. Steers, Jr., Kalamazoo, Mich.

THIS MONTH IN BRIEF

Merchandising possibilities in the ice industry are brought up to date in a bulletin issued by the Public Information and Marketing Department of the National Ice Association. Reprints and other sales helps are available.

Commercial ice customers are natural prey of the little ice making machines. At a recent sales conference some of their chief talking points were stated and it adds up to a responsibility of ice men to keep telling their story.

A young and attractive St. Louis beauty, just out of high school, has been selected Iced Tea Queen for 1952 by the Tea Council. Tieing in with that, the Council offers iced tea truck posters available to all ice companies.

A business conference of Unit Ice Association secretaries was held in Washington May 13-14. Outstanding developments including "The Changing Ice Industry" were discussed.

Unit ice associations continue with their annual meetings, offering informative programs and social diversion for ice men and their wives.

Merchandising Tips and Data For the Ice Industry

A BULLETIN issued by the Public Information and Marketing Department of the National Association of Ice Industries brings up to date some of the more outstanding merchandising possibilities. These include iced tea publicity, visomatic recordings, meat-on-ice, advertising mats, meeting little ice machine competition, iced chickens, iced sweet corn.

For the third consecutive summer season, the Tea Council offers ice companies full-color truck posters. Iced tea continues to be a favorite summertime beverage and here is an opportunity to tie-in with the Tea Council's national consumer advertising campaign.

For the meat-on-ice program, a visomatic slide film presentation and recording of testimonials will be available. This is one of the most powerful methods of selling ice in recent years. The visomatic film is in full color, is easily handled, and makes for a smooth sales talk. When meat retailers hear what others in their field say about meat-on-ice, they will more readily realize that meat icing can produce bigger profits for them.

The message will be slanted toward the customer so every ice man can use it as is when contacting possible users. Meat-on-ice is catching on all over the country. It takes salesmanship to persuade meat handlers of their need and this visomatic film presentation with accompanying text provides an excellent means of convincing customers to use ice for this purpose.

Since June is the traditional bride's month, Life magazine carried an advertisement of the "Bride's Bowl" on May 26. Progressive ice men should be going after wedding receptions in a big way. Here is a good potential market for the sale of all kinds of ice, cubed, crushed and sized. Punch bowls and ice carvings can also be suggested.

The Publicity Department of the Puerto Rico Rum Institute offers free mats obtainable through the National Ice Association office, showing a beautiful punch bowl in all its elegance with a block of ice prominently displayed. A recipe will accompany each mat which can be set in any size type to suit the amount of advertising space purchased. The supply is limited. First orders will be first served.

Recently the problems of competitors in selling "on premises" ice making machines were outlined. Here are some ideas on how to meet this competition. Good merchandising calls for personal calls on present customers and prospective ice users. The all-important follow-up, or second call, is often the move that makes or keeps the sale. Get to know customers personally and keep them aware of your interest in their sales problems.

Ice Salesmanship

It is conceded these days that salesmen have to sell more than their product; they have to sell service. Because of the nature of his business, the iceman must go beyond ordinary selling methods. He varies the form of ice; crushed, cubed, sized, and block, and the way it is delivered. But, he sometimes neglects to have someone other than the route man call on his grocer, beverage, restaurant, hotel and hospital customers after the original sale has been made. This mistake, according to salesmen of "on premises" machines, is the opportunity for them to get their feet in the front door.

Competitors capitalize on the research efforts of the National Association of Ice Industries because, as one man put it, "Icemen still take business for granted." Ice making machine salesmen are invading the produce, meat, poultry and fish icing market armed with facts advertised by the ice industry. Their biggest single asset: "The iceman has not been around to take advantage of the selling information at his command!"

A representative of the Public Information & Marketing Department

recently called on two top sales managers of the Armour Dairy and Poultry Division in Chicago. The effort proved mutually helpful to the Armour people and members of the National Association of Ice Industries.

The Armour executives expressed eager willingness to work with the ice industry in furthering sales of chicken on ice. Armour has converted to a complete icing process from killing to display. A program is being worked out to unite with icemen everywhere in introducing "Fresh Iced" chickens. Armour point-of-sale banners mention ice, Armour salesmen will be encouraged to contact icemen before meeting with prospective customers and Armour likes the idea of tieing-in with the ice industry.

The last Research News Letter issued by the National Ice Association gave some interesting facts about icing of sweet corn in paper bags. The best way to start is through the county agent, and once he has been sold on corn icing, the ice man's task becomes rather simple. He is on the lookout for new ideas and he can tell where to reach progressive farmers who grow sweet corn.

Little Ice Makers Raid The Ice Industry; Forceful Selling and Service Needed

FROM the Research and Engineering Department of the National Association of Ice Industries comes a bulletin of interest to all ice distributors who are affected by competition from small ice making machines. The bulletin is based upon report of a two-day sales and service meeting of The Ajax Corporation, makers of a small ice maker.

At this meeting the general manager gave the following figures to indicate the national market for automatic ice making equipment: 195,000 restaurants; 11,000 hospitals; 3,000 major hotels; 681 drug chains operating 5,581 stores; 1,000 industrial cafeterias; 200,000 liquor, wine and beer licenses. Also listed were industry, delicatessens, and laboratories. Among prospects for the Ajax Ice Flaker, he said, are super markets, poultry processors, florists, sausage makers, and bakeries.

How They Take Ice Customers

All ice men, of course, know that in general these businesses are their commercial ice customers! They should know that the people who attended this meeting and those of some fifteen or twenty additional manufacturers of ice makers are increasing their efforts to sell on-premise machines. This meeting was held to map out a sales program which will get more business. It was for the specific purpose of pumping the salesmen full of enthusiasm and igniting their shirttails. It is more or less typical of what is going on throughout the on-premise ice maker industry.

The report of that meeting tells how they are going to take ice customers. They are going to stress that their equipment ". . . provides ice 'when you want it and where you want it,' eliminating the uncertainty of ice deliveries is sanitary and clean; and produces ice for far less than the cost of delivered ice."

These selling points are important to every iceman—availability, cleanliness and cost. They furnish a guide which should be rigorously followed in serving his present customers. They earmark for him the selling arguments which he must be prepared to meet. They give him a clue to the many selling points which are available for his use.

What do these people think of the ice industry as competitors? We can say with some pride that they respect us. They indicated that we are doing a better merchandising job and that our sales fight is fair and vigorous. "It's a wonder," one speaker said, "that ice manufacturers didn't go out of business with the advent of electric refrigeration. But they survived by developing new markets, selling new uses for ice." Salesmen were warned, ". . . not to underestimate the ice industry in the battle for sales. . . the ice industry realizes that the automatic ice maker is a threat, and is fighting back, not so much by running down the automatic ice maker as by improving service, courtesy, and public relations. In this connection attention was called to a bulletin by the National Association of Ice Industries on the subject."

Good Merchandising

These comments substantiate what we have known, that many ice companies are doing a good job meeting this competition. What's more, these comments furnish sound criteria for good merchandising. They tell what kind of merchandising pays off. They tell what kind of merchandising makes the selling of point-of-use ice makers difficult. This should be stimulating to companies which already have a program of approach, and it should encourage others to make full use of forceful selling and efficient, courteous service to meet this competition.

At that meeting, salesmen were given a simple illustration of an economy story. It, like others we have seen, covered only two cost items—power and water. This is done because it make a good sales story, but it by no means makes a complete cost story. (Ice Research NEWS LETTER No. 25.) Figures on costs in addition to including power and water are ordinarily computed under excellent conditions and at very favorable rates. Capital investment; depreciation; maintenance, repair and service costs; taxes; insurance; additional plumbing for installation; rent on floor space; and labor required to keep the unit clean, to look after it, to handle the ice and to make minor adjustments are seldom mentioned.

"Up to" is Maximum

Most of the manufacturers of point-of-use ice makers claim that their units will produce up to so many pounds per day. "Up to" indicates the maximum. It usually means that the machine would make this much ice under ideal conditions, which seldom if ever exist under actual operating conditions. Per day does not refer to a business day, it means 24 hours of operation. The volume of ice produced by an air-cooled unit declines materially as the temperature of the air and water rises. Consequently, the customer gets the smallest production during the time of his peak demand for ice. Don't overlook these items when this subject is discussed with your customers.

It's generally recognized that one of the best methods of developing a sales approach for a product is to know your product and to understand how it will benefit your customer. Probably the second best selling aid is to know your competitor's product and to thoroughly understand what it will and will not do for the prospective customer. You know ice, and you know the ice business. You know what ice will do for your customer, so the real purpose of these paragraphs is to pass along some information on competition which otherwise might escape the attention of ice men.

St. Louis Beauty Chosen Iced Tea Queen Will Lead Queens of Industry

A STARRY-EYED, golden-haired teen-ager, just out of a St. Louis high school, will lead a new association of American beauties this summer to be known as "Queens of Industry." She is Marian Lee Burnett, the Tea Industry's 1952 Iced Tea Queen, who has just won that coveted crown from more than 1,000 other St. Louis lovelies.

James J. Booth, Director of Merchandising for the Tea Bureau, hands the Iced Tea crown to lovely, young Marian Lee Burnett, St. Louis high school girl, who has been chosen "1952 Ice Tea Queen," from more than 1,000 contestants. A St. Louis girl was honored by the Industry because Iced Tea was discovered there at the World's Fair in 1904. National Iced Tea Time will be celebrated July 11 to 19.

The idea of the association is that it will bring a new group of representative American girls, chosen from each industry, to Atlantic City when the all-American beauty is chosen. These "Queens of Industry" will serve in Miss America's Court during the festivities.

Started in St. Louis

Because St. Louis first gave iced tea to a panting world on a stifling day in 1904, the tea industry decided to honor a St. Louis girl as Iced Tea Queen for 1952.

Daughter of a St. Louis grocer, Marian has a naturalness reminiscent of those girls who crowded about that tea bar at the World's Fair on that wilting day in 1904 when a young Englishman, who was trying to promote Black India Teas, hit upon the idea of pouring his hot tea into a tall iced-filled glass.

Along with the title of "Iced Tea Queen" went a $1,000 wardrobe, glamorous enough to delight the heart of a real queen.

Included was a specially designed Ceil Chapman cocktail gown in an Iced Tea shade; three pieces of beautiful Fashion-wise Luggage in blue by White Star; a huge bottle of Guerlain's Shalimar Perfume; a Ray Modes Robe; six pair of Wear-Right Gloves in assorted colors; a Treo Girdle; Tea-toned Pearls and Earrings by LaTausca; a Queen Watch especially designed for her lapel by Otto Gruen; a Volupte Compact and Lighter Set; a Sadler Teapot; a Maiden Form Brassiere Wardrobe; a dozen pairs of Holeproof Hosiery; Lingerie by Chevette, and a Hallcraft China Tea Set designed by Eva Zeisel.

George Fisher, famous CBS Hollywood commentator, arranged a number of additional glamour gifts for the Queen from Hollywood. These included: a Catalina Swim Suit Wardrobe; a Rosenblum of California Suit; a Diamond and Gold Benrus Watch; a beautiful, complete Max Factor Leather Make-up Kit, and an Evans Ladies Handbag.

National Iced Tea Time will be celebrated July 11 to 19.

Iced Tea Truck Posters Now Ready

FOR the third consecutive year the Tea Council offers Iced Tea truck posters to all ice companies. Full-color placards similar to what have been distributed in the past (size 20½ x 30½ inches) are now ready for shipping. Ample supplies have been received by the Public Information and Marketing Department, NAII. A bulletin announcing this offer was recently sent to all Ice Companies from the P. I. & M. Department.

The Tea Council is well pleased with results of this cooperative effort and is solidly behind ice companies in fostering increased sales of iced tea. Reports from many ice companies which have used point-of-sale display banners and literature in contacting commercial customers indicate a marked increase in ice sales for iced tea.

As a reminder, the Tea Council advocates the "2-ounce formula" when making iced tea. That means: two ounces of tea to a gallon of water. The result is a stronger, better-tasting brew which requires plenty of slow-melting, crystal-clear Ice. The Tea Council is "sold" on Iceman's Ice for making delicious iced tea. In fact, in the regional meetings the Tea Council conducts throughout the country, the use of Iceman's Ice is strongly encouraged.

The only cost to ice companies is express shipping charges. Since posters are now on hand, orders will be filled on a first come, first served basis. In view of the number asked for in previous years the supply is ample for all who wish to take advantage of this generous offer.

Ideal for truck posting, the cards also may be utilized for display on ice vending machines and rear platforms. It is requested by the Tea Council that companies make every effort to keep clean, unfrayed signs on their trucks.

A parafin coating protects the smooth surface against bad weather. Although this helps, ice companies are requested to order enough posters for replacement of those which get damaged in any way.

If any ice company would like "tie-in" material, that also is available from Francis X. Timmons, Director, Advertising and Publicity, Public Information & Marketing Department, NAII, 1706 L Street, N.W., Washington 6, D. C.

Here is a splendid opportunity to receive valuable advertising assistance, simply for the asking. The only cost involved is the few pennies to have posters shipped.

Reports from Unit Ice Associations

Southwestern Convention Views Operating Problems and Wider Markets for Ice

BEGINNING with the dinner to past presidents given by the Board of Directors and attended by ice industry leaders, and ending with the last dance played by Fletcher Hereford and his orchestra, the Southwestern Ice Manufacturers' 61st Convention at Fort Worth March 12 through 14 will be remembered for its informative and encouraging business sessions and for the friendly and hospitable spirit that pervaded both the business and the social convention functions.

A balanced convention program included discussions of organizational problems by National and Southwestern Association officials, an outstanding address by an industrial leader under the title, "This Year of Decision", a panel discussion of operational problems, a survey of present and future markets to which research is pointing the way by C. P. Austin, "Prof" Davis' great contribution to industry progress under the head of "Meat on Ice", a great ice man's address to other ice men by the National Association President, William J. Ayers, a jolly tea and style show for the convention ladies given by the President's lady, Mrs. Roy Stamps, a get together dinner-dance given by the Fort Worth members, the President's annual cocktail party, dinner, dance and floor show featuring great music and great artists in the entertainment field.

Finances

After a cordial welcome by O. T. Clark, the convention got under way with the report of the Treasurer, Jacob M. Irvine of Dallas. This report showed that the Association during the last year had lived within its budget, but its income exceeded its expenditures by a margin that is entirely too thin. The Treasurer stated that the Board of Directors had endeavored to stabilize income for the Association by taking the 1949 tonnage experience as a basis for dues assessments. The response to this has been very satisfactory, but, although the Association budget of expenditures has not been increased over the last three or four years, the balance between income and expenditures is entirely too thin and it may be that further revision of the dues assessments will be necessary to prevent depletion of the small Association reserve.

Southwestern Officers—1952

President, Ralph H. Irvine, Palestine, Texas.

Vice-president, W. Clarence Stevens, Omaha, Texas.

Treasurer, Jacob M. Irvine, Dallas, Texas.

Executive Secy-Counsel, Gen. P. A. Weatherred, Dallas, Texas.

The keynote of the convention was really struck by President Roy A. Stamps in his annual report as President of the Association. The situation confronting the ice industry today and the coming season, he said, is but a projection of the conditions that our association analyzed and forewarned us of over two years ago. No phase of the present situation can be fairly considered as a surprise to any of us who paid heed to what the association, through its releases, through its conferences, and through its conventions, has pointed to, and emphasized the various phases of the situation that were making up for us. Then, as now, you were concerned about the prospect for this and succeeding seasons; about the favorable and unfavorable factors within your own business, along with the effect upon your business of the emergency economy.

Individual advice and assistance rendered members during the year by the association staff has been at an all time peak. Adjustments under the price regulations, wage and salary stabilization problems, some twenty-five wage and hour matters, a number of them of critical importance; interpretation of various state laws; several tremendously critical market problems; numerous matters that partake of professional privileged communications and therefore not subject to comment; all of these treated with sound and recognized professional skill, have made up what for many of our members are services out of all proportion in value to the cost of membership dues.

Mr. Stamps closed his address with an expression of appreciation for the cooperation extended by the officers, by the members of the board of directors and by the staff during the past year.

The Ice Business

Under the title "Our Business-Nationwide Perspective" the National Association's executive secretary, Guy W. Jacobs, gave an interesting and comprehensive review of the services the National Association rendered the industry last year. The report reflected an active year of service by a staff of recognized professional skill in industry organization and leadership. The National secretary endeavored to and did succeed in carrying home to the individual operators the sense that they are important members of a great and important industry. The address was a forceful and effective appeal for industry organization on the National and state levels.

Mr. Jacobs reviewed the work of the various departments of the National Association, including the legal department, public relations, magazine publicity and advertising and the research and engineering department and listed the collection of information on the production and sale of ice as an important activity.

In closing he offered a four-point program covering prime requisites for progress by ice companies. (1) Maintenance of high standards of sanitation, cleanliness and neatness in the plant and in all equipment that is seen by the public. (2) Aggressive merchandising. Ice must be sold and sold hard to every possible customer by every possible means. (3) Public relations. Hand in hand with merchandising goes the promotion of your company as a factor in the community. Advertising is one phase, publicity is another. If you really work at it, you can get in the public eye and stay there, in a favorable light. (4) Membership in both the unit and National associations.

Year of Decision

J. B. Thomas, president of Texas Electric Service Company of Fort Worth closed the first session of the convention with an informative and inspirational address on the political and economic issues that confront the American people during this "Year of Decision."

In forceful, factual but inspiring fashion this outstanding industry leader sounded the call for business

men to exercise determined leadership in bringing the people of their communities to realize the now full blown and dire threat to our free institutions. He emphasized the critical fact that belief in our democracy is a nullity unless it is reflected by the vote of the people.

Operational Session

From the point of view of the manager of a Texas ice operation, the most informative and helpful session of the convention was the Operational Session, which was taken up almost entirely with reports, discussions and questions from the floor, through a panel composed of Jacob M. Irvine, Southern Properties, Dallas, leader; W. Clarence Stevens, Northeast Texas Ice Company, Omaha, Tex., whose topic was "Operational Facts"; J. Hudson Gardiner, American Service Company, Eaxahachie, Tex., whose subject was "The Route Problem"; E. W. Franke, supervisor of ice operations, Central Power & Light Co., Corpus Christi, Tex., whose topic was "The Vendors"; and Charles E. Lamka, Amarillo Ice Co., Amarillo, Tex., whose topic was "Processed Ice."

This managerial session was opened by Jacob Irvine. He pointed out that one of the important problems in the ice business is how to make a profit, not for just one year but on a continuing basis of every year. Six years ago, he said, that was no problem. They did not have to sell ice; people took it away from them. But now ice sales are about one-half of what they were just five years ago, and the trend is still downward.

To counteract this decreased tonnage, Mr. Irvine said, his company is pushing sales of ice through drive-in grocery stores. Since the war, about eight of these stores have been built, and five of them sell block ice and crushed ice in paper bags. Today they deliver much more ice to these five stores for resale to the domestic trade than they deliver from their route. The enormous increase in this type of ice sales since the war, he concluded, proves that the customer considers this product worth the money. If this crushed ice is made available to him at convenient locations, he will come after it, use lots of it, and not quibble about the price.

W. Clarence Stevens, owner of the Northeast Texas Ice Company which operates a number of plants in small towns and cities in the northeastern part of the state, spoke from his own rich experience, since he became the owner of the Northeast Texas operation in 1944. Mr. Stevens reviewed his experience as operator of two refrigerated stations. In 1949 these two stations sold 2,800 tons of ice at retail for $31,000. Operation at these two locations, after all fixed costs netted a loss of $1,000. By the last of 1950 they were changed to operation by individuals who now buy ice at $5.00 per ton f.o.b. the docks. The net result was that in 1951 the earnings at the centrally located plant increased by more than $8,000.

The company also operates a grocery store in connection with a retail ice station. At the end of 1951 it was expected that this store would have sold more than $60,000 in groceries, exclusive of its ice operation. This year they expect to sell at this store 2,500,000 pounds of retail ice for a little more than $15,000. Out of this operation the company will earn an operating profit of approximately $2,500.

The company also has developed a considerable tonnage in the business of icing trucks. From records of a small plant with three vendors on U. S. Highway 67 they expect ice sales in 1952 to amount to $4,000 to $6,000. Another source for a large volume of ice sales in early summer is furnishing ice for the shipment of vegetables, principally sweet corn.

The Route Problem

J. Hudson Gardiner, American Service Co. Waxahacie, Tex. gave a factual report on the delivery problems that have confronted his operations during the last few years. Reduced delivered ice sales, he said, present a major problem which demands immediate action, and it is complicated by difficulty of employing and holding competent men. His company has met the situation by raising the pay of the deliverymen, selling coupon books at a discount to commercial customers, and keeping accurate route records on expenses, receipts, and amounts of ice sold.

Ice Vending Equipment

The company operating the greatest number of vendors in Texas is the Central Power & Light Company, Corpus Christi, Tex. At previous conventions of the Southwestern Association, members of this company have given reports on the development, use and operational results of the vending machines, both those installed at the docks at the plants and separate vending stations.

E. W. Franke's report, given as part of the panel deliberations on operation, was in the nature of a later chapter on the experience that Central Power & Light Company is enjoying through its vending operations. This company now has 136 vending units located in 24 ice plants and 15 vending stations, practically all of which have been very successful.

Processed Ice

For the last several years, one of the most progressive members of the Southwestern Association in the promotion of processed ice has been Charles E. Lamka, manager of the Amarillo Ice Company at Amarillo, Tex. His presentation of the developments and the opportunities in the processed ice field, was one of the most impressive of all the convention discussions. In factual and succinct fashion, he pointed up the trends and the opportunities clearly indicated from his own experience in the marketing of processed ice.

By means of a chart, Mr. Lamka showed that their ice market is showing a definite trend toward processed ice and away from block ice. This offers tremendous possibilities in the sale of processed ice for cooling and packing poultry, vegetable icing, and meat on ice. But it must be merchandised, glamorized, and the customer told what it will do for him, he said.

Mr. Lamka told an interesting story of how he met ice machine competition. Prior to 1950 several of these machines were installed. During that year his company started producing top quality sized ice and, backed by a merchandising program, during the last two years there has not been one point-of-use ice machine placed in Amarillo. Four things have kept them out:

1—A better and more attractive product than they can produce.

2—Hard, clean competition between the ice plants in the market, which automatically makes for improved service.

3—Trained ice service men.

4—Advertising.

Ice Safety

The second session of the convention was closed by a talk delivered by William F. Leonard, insurance and safety director, Southland Corporation of Dallas, with a very colorful presentation of his talk on ice safety. Speaking to the managers present, he said the safety job rests upon the shoulders of every manager and that their job is 1—to prevent mechanical failures, and 2—to cull out human errors.

Final Session

Election of officers and members of the board of directors for the ensuing two years was the convention feature that led off the third and final session of the convention.

Ralph H. Irvine, for several years chairman of the Technical Committee, and for the last year vice-president of the association, was advanced to the office of president.

Five directors elected to serve for two years were: Frank B. Alderdice, Southland Corp., Dallas; R. D. Borden, The Borden Co., Junction; Edward M. Muse, Crystal Ice Co., Fort Worth; Jules F. Naquin, Naquin Ice Co., Port Arthur; H. N. Pierce, A. D. Martin Properties, Dallas.

Hold-over directors who serve for one additional year are: W. S. Cooley, El Paso Ice & Refrigerating Co., El Paso; E. W. Franke, Central Power & Light Co., Corpus Christi; J. H. Gardiner, American Service Co., Waxahachie; Elmo McGee, Southern-Henke Ice & Storage Co., San Antonio; T. D. Meacham, Permian Ice Co., Monahans.

New Sources of Profit

C. P. Austin, director of research, National Association of Ice Industries, gave a very comprehensive report upon the theme of developing new sources of profit through research.

Mr. Austin said the chief research objective during the current year has been to search for new markets and new adaptations for ice. Among the projects studied have been contact icing of poultry, icing of sweet corn, use of ice in fresh meat cases, ion exchange for treating water used in making ice, equipment for automatic production of prepared ice, hydrocooling of fruits and vegetables, use of ice for display of packaged self-service meats, use of ice for flowers, shrimp icing, location and other factors of ice vending stations. All of this work, he concluded, has been of great value to the ice industry; but it will be of no value unless followed up with a sound, aggressive selling program.

Meat on Ice

"Prof" Davis of the Union Ice Company, San Francisco presented the address, with some minor changes, that he delivered to the National Convention in Houston last November, on the new and interesting development in the combined use of ice and mechanical refrigeration in meat cases. Since this address was published in full in the January and February issues of ICE AND REFRIGERATION, it is not reported here.

Answering the question whether meat-on-ice really pays, "Prof" Davis played for the convention a few of the scores of testimonials of which he has made wire recordings. These recordings were quite impressive, coming from practical men who are concerned with the operation of an important department of their business.

Honor Guest Closes

The closing address was made by an honored guest, Wm. J. Ayers, president of the National Association of Ice Industries. Mr. Ayers gave a straight-forward talk of one ice man to another on the situation and the opportunities of the business in which they find themselves engaged.

Convention Entertainment

A combination business and entertainment feature was the board of directors' dinner given to the past presidents the evening preceeding the opening of the convention. This dinner was attended by owners and executives of member companies who joined with the board of directors and the past presidents. The dinner was followed by two hours or more of off-the-record discussion of matters of vital interest to those who are responsible for the investments in the ice industry.

The ladies of the convention were entertained at a "Ladies Tea" in the afternoon of the first day. The occasion was enlivened by a style show put on through the Wally Williams store of Fort Worth.

The Fort Worth members were hosts to a dinner dance given in the Keystone Room of the hotel on the first evening. After cocktails and a delightful dinner, the guests danced until the late hours to the music of Ran Wilde and his orchestra.

One of the oldest and most popular of Southwestern convention traditions, is the annual cocktail party, dinner, floor show and dance. This affair comes on the evening of the last day of the convention. Following dinner, General Weatherred, executive secretary-counsel of the association, presented to the retiring president a certificate of appreciation, in the form of a plaque expressing appreciation to Mr. Stamps for his constructive leadership as 1951 president of the association.

The dinner was followed by a floor show and following the floor show, dancing lasted until the small hours.

Northwestern Ice Men Review Conditions and Outlook for 1952

THE 1952 annual convention of the Northwest Association of Ice Industries held in the beautiful Hotel Chinook, Yakima, Wash., March 26-28 was one of the best conventions the association has had. The attendance was good, every subject that concerns the ice industry was discussed and many valuable ideas were brought out. The "Fruit Bowl of the Nation" boys (and girls) made good on their claim that they would give a convention the members would remember with pleasure.

There were 39 registrations in addition to many wives. The ladies are an important part of Northwest conventions and add tremendously to the happiness and success of the event.

The business sessions were brief, covering minimum requirements, and took very little time from the more enjoyable and profitable parts of the convention. It was decided that there would be just one conference this year instead of the two that have been held for the past few years. This one conference will be held at Everett, Wash., October 13. This will be just a one day conference, a round table discussion that will take up every detail of the ice industry.

The next convention will be held at the Empress Hotel, Victoria, B. C., March 25-27, 1953. This setting will make it possible to combine a convention with a superb vacation trip.

Northwest Officers for 1952

President, W. R. Ridley, Vancouver, B. C.
Vice-president, Duane Dryden, Tacoma, Wash.
Secretary-treasurer, W. L. Burns, Yakima, Wash.
Executive Secretary, L. F. Marsh, Portland, Ore.

Opening Session

At the first session of the convention which was devoted to business and some general reminiscing by the older men of the industry, there was a note of pessimism evident, tonnage output was down, the demand for ice, especially by domestic customers was slowing up or stopped, the good old days were almost over. Then beginning with the actual constructive part of the program, younger men in the industry took over, told about how they were developing new outlets for ice, how they were getting new customers, how they were going out and getting this new business in an ever-growing volume;—the future looked good for the industry through their eyes; there is going to be some changes but it is not a dying industry, there is an attractive future ahead. A few individual companies may not have the will to fight but so far as the live ones are concerned, it will continue to meet the conditions as they come up and will go places and do things with increasing success. That was the opinion of the younger members.

The Thursday afternoon session began with "Meat on Ice" presented by J. Russell Calvert of Burbank, Calif. Mr. Calvert has been working with "Prof" Davis and the Union Ice Co. and he gave the story of Meat on Ice very completely, presenting it with illustrated slides and charts. The interest in this was shown by the many questions answed by Mr. Calvert at the close of his talk.

Produce Icing

"Produce Icing" was discussed by Ray Schneider, Renton Ice and Ice Cream Co., Renton, Wash., and Ray Burgess, Ranier Ice & Cold Storage Co., Seattle, Wash. Both of these companies have developed a remarkable business on this produce icing, and, in addition, Mr. Burgess's company has gone in for "Meat on Ice" and has been very successful with that too.

Economies as seen by an engineer was the subject of a talk by Gilbert Harris, Harris Ice Machine Works. Mr. Harris suggested that ice machine companies would be very happy to have a representative go through an ice plant, check its operation, talk with the engineer, analyze conditions and make a report of the findings with recommendations of steps that could be taken to effect economy.

Thursday evening members of the convention enjoyed a full Chinese dinner at the Skyline Cafe.

Talking on the general subject of "What's Wrong with the Ice Industry", Thomas Gilliam, Western Ice Equipment Co., gave some practical ideas on selling and merchandising ice. He said that plans are well underway to develop an automatic cube making machine that will produce low cost cubes or sized ice thus enabling the industry better to meet competition of the small ice making machine.

Duane Dryden, discussing the subject of public relations in retail delivery, emphasized the fact that only capable deliverymen can do the kind of job that is needed by the industry.

Paul Henningsen of Northwest Ice & Cold Storage Co., Portland, gave an interesting talk on car icing.

A panel forum led by J. Russell Calvert, Ray Burgess and Tom Gilliam was one of the high points of the convention. The leaders of the panel told in a convincing manner how easy it is to sell meat on ice by using the merchandising aids that are available, and gave other merchandising pointers.

The annual banquet held Friday evening was a success in every way and provided a fitting finish to the annual convention.

Directors Elected

Directors for 1952 were elected as follows:

Board of Directors: W. L. Baker, Seattle, Wash.; L. K. Davidson, Portland, Ore.; Sam Garvin, Vancouver, B. C.; Wm. Morrow, Vancouver, B. C.; Ray Schneider, Renton, Wash.; A. E. Soli, Everett, Wash.; John Stevens, Walla Walla, Wash.; W. L. Wilson, Victoria, B. C.

Golf Coast Ice Association Annual Meet

NORTHWEST Florida and south Alabama ice men, their wives and friends assembled in Mobile, Ala. April 17 for the Spring meeting of the Gulf Coast Ice Association. Luncheon was served at Joe Byrnes restaurant and the business meeting held immediately afterwards.

R. A. David, president of the Florida Ice Association, was one of the principal speakers, on the subject of the future of the ice business.

Officers of Gulf Coast Ice Association: L. A. Matrone, secretary; Mrs. Mary Hall, vice-president; J. W. Nipper, president.

During the course of his address Mr. David pointed to many sign-posts on the road the ice industry must travel. The day of individual effort in many lines of endeavor is fast disappearing, he said. It is practically impossible for a small plant operator to keep abreast of the ever changing government controls, federal and state laws. Small plan owners have neither the money nor personnel to conduct research on new market developments or to provide a satisfactory public relations program to keep ice before the consuming public. Therefore; it is imperative that ice men work through their national, state and local ice associations.

The form of ice bought by the consuming public is rapidly changing from block ice to forms of ice processed to more nearly fit the users needs. Sales surveys show that while block ice sales are decreasing, processed ice sales have increased. Future growth of sales of most ice companies will be in the field of processed ice.

The methods of ice distribution are changing. Packaged ice, vending machines, ice available 24 hours a day are examples of changing distribution methods. Possibly the primary reasons for the change is the prohibitive cost trend of house to house delivery and small commercial delivery, caused by continually higher priced labor

and truck operating costs. This effect of high cost trend of delivery service is not peculiar to the ice industry. It is a common and important problem to coal, oil, laundry, milk, and any service where the number of stops per day, per man, is limited by traffic conditions and the driver's willingness, or ability, to increase the number of calls per man.

A. A. Geiger of Buford, Ga. gave his impression of points emphasized by Prof. Davis in his discussion of the meat-on-ice program at the National and Georgia Ice Conventions. A general discussion on ways and means of selling and installing ice in mechanical meat cases followed.

Martin J. Johnson, staff member of Radio Station WABB in Mobile, gave an address on the general apathy of our American people to the danger facing this country. Ours is not always the victory in the skies over Korea as some news stories would have us believe, he said. The Reds have an almost inexhaustable supply of raw native recruits behind the iron and bamboo curtains.

The following officers and directors were elected for the coming year.

Officers and Directors

President, J. W. Nipper, Pensacola, Fla.

Vice-President, Mrs. Mary Hall, Mobile, Ala.

Treasurer, Ashford Broughton, Andalusia, Fla.

Secretary, L. A. Matrone, Pensacola, Fla.

Directors: C. G. Yarborough, Pensacola; J. M. Barnes, Quincy; H. L. Taylor, Selma, Ala.

Mobile ice men were hosts at a cocktail party after the business meetings, and a delicious sea-food dinner was enjoyed by delegates later in the evening.

Missouri Ice Men Hold Spring Meeting

THE Spring Meeting of the Missouri Valley Ice Manufacturers Association held March 18 at the City Products Corporation Showroom, 3638 Olive Street, St. Louis, Missouri, was attended by 77 industry members.

C. P. Austin, Director of Research of the National Association of Ice Industries, who was in St. Louis on his way from the Texas Convention to the Illinois Convention, attended the meeting and told of the work the Research Committee has been doing on the meat-on-ice, poultry icing and corn icing projects.

J. M. Cunningham, Sedalia Ice & Cold Storage Company, gave a report on the poultry icing demonstrations that are being conducted in Missouri by Ted Joule of the Missouri University. He said that these meetings were very well attended by the grocers in Sedalia and that Mr. Joule does a very fine job of presenting the poultry on ice program.

Other items of interest to the ice industry were discussed at the morning session and there was a complete display of the various types of ice using equipment.

The afternoon session, which was attended by members of the meat packing industry around St. Louis, was devoted entirely to the meat-on-ice project. Richard C. Muckerman gave a talk on the subject and showed the slides prepared by the Union Ice Company.

Following his talk, Charles Bardol, Sales Manager of City Products Corporation, told of some of their experiences in setting up this meat on ice program and gave an actual demonstration on preparing a mechanical display case for a display of meat on ice.

One of the sessions of Missouri Valley Spring Meeting.

Mountain States Association Of Ice Industries

J. R. ESPEY, Secretary

THE 35th annual convention of the Mountain States Association of Ice Industries was held April 11-12, 1952 at the Brown Palace Hotel, Denver, Colo. The attendance was small, somewhat disappointing, but the quality and interest shown in the meetings left nothing to be desired.

The convention was held around the conference plan with L. L. Belcher as moderator of the Merchandising Section, and J. Reimer Espey as moderator on Employer-employee Relations. The Engineers round table was in charge of D. B. Thompson and a discussion of the lastest developments in cold storage was led by Robert Belcher. Walter Elliott headed up a discussion of the Office of Price Stabilization and M. P. LaChapelle gave an interesting talk on insulation.

Officers and Directors

The following officers and directors were elected for the ensuing year:

President, Henry Nadorff, Denver, Colo.

Vice-president, J. Bruce Espey, Denver, Colo.

Secretary-treasurer, J. Reimer Espey, Denver, Colo.

Regional president, Frank W. Adams, Denver, Colo.

Regional Director-at-large, L. L. Belcher, Pueblo, Colo.

Directors: Walter T. Elliott, Albuquerque, N. Mex. Robert L. Belcher, Pueblo, Colo.; J. T. Hughey, Greeley, Colo.; Bill Goan, Billings, Mont.; H. B. McClusky, Rocky Ford, Colo.; D. E. Woodson, Cheyenne, Wyo.; Clarence Adams, Denver, Colo.

Canadian Association Holds Spring Conference

A WELL attended spring conference of the Canadian Association of Ice Industries was held Tuesday, April 22 at the "Estaminet Hotel" in Burlington, Ontario.

At the morning session the selling of refrigerators was discussed and Matt Kennedy, General Manager of the Renfrew Electric & Refrigerator Co., Ltd. was very pleased with the enthusiasm shown by the delegates.

The afternoon session covered two topics—"Developing Profitable Routes," and "Meat Icing." At the close of the afternoon session at 5:00 p.m. everyone was more than pleased with the program.

T. G. Rogers, vice-president of Lake Simcoe Ice & Fuel Limited, Toronto, was guest speaker at the luncheon.

Unit Secretaries Meet in Washington

SECRETARIES of 13 unit ice associations attended a two-day business conference held May 13-14 in Washington under auspices of the National Association of Ice Industries. Because of prior commitments, several of the secretaries invited were unable to attend, but those present pronounced it the most fruitful of the Spring meetings held to date.

Guy W. Jacobs, NAII Executive Secretary, presided. Following his introductory remarks, current business of the Unit Association Secretaries' Council was reported. Gen. P. A. Weatherred, secretary of the Southwestern Ice Manufacturers' Association, then spoke on "The Ice Industry and Its Changing Economy."

Unit ice association secretaries meet with NAII staff. Pictured around the table: F. X. Timmons, NAII; H. H. Snyder, Virginia Association; Harry T. Hudson, Oklahoma Association; E. Dana Smith, West Virginia Association; W. T. Jobe, NAII; V. A. Esphorst, Missouri Valley Association; Georgia Cunningham, NAII; Lewis H. Powell, North Carolina Association; W. D. Wright, Illinois Association; Muriel Washburn, Florida Association; Guy W. Jacobs, NAII; Gen. P. A. Weatherred, Southwestern Association; Esther Christiansen, NAII; J. G. Pool, NAII; R. N. Milling, Delta States Association; Paul F. Hoff, Wisconsin Association; C. P. Austin, NAII; L. F. Marsh, Northwest Association; Elizabeth Shannon, Ohio Association; Robert H. Wilson, Eastern States Association.

Drawing on his 28 years of experience in the ice business, Gen. Weatherred outlined the revolutionary changes which he has seen take place during that period and analyzed the current status of the industry. "The major development," he pointed out, "has been the rise in the importance of processed ice. The prepared forms for which there are so many domestic and commercial uses have replaced block ice as our main source. I believe our processed ice markets offer great possibilities.

Reports on current NAII activities were given by W. T. Jobe, General Counsel, C. P. Austin, Research Director, F. X. Timmons, Advertising and Publicity Director, and J. G. Pool, Assistant Advertising and Publicity Director. Austin announced that the final report on the California meat icing study had been prepared and was now ready for distribution to the membership. He also told the group that the plant equipment situation has eased considerably.

Timmons described the numerous tie-in projects which the new P. I. & chandising efforts presently under way. Pool showed clipping of news M. Department is working out with allied industries, and listed meritems about Ice carried in national publications during the past six months.

Remainder of the meeting was devoted to discussion of the individual activities and problems of the unit associtions represented. Council President Muriel Washburn, secretary of the Florida Ice Association, mentioned the one-day merchandising schools for Ice Company routemen and platform men which have been inaugurated in her state. V. A. Esphorst of the Missouri Valley Ice Manufacturers Ass'n said that his group is continuing cooperation with the poultry retailing schools held by the Poultry and Egg National Board.

Also considered were means by which the unit associations can help member companies become more public relations-conscious, train their employees to give better service, and sell ice-using appliances. NAII staff members asked for and were given suggestions on additional aids they could provide the unit secretaries.

Finally, the group exchanged information on such mutual association functional problems as recruiting new members, conducting conventions, dues arrangements, and bulletin service.

New member of the group attending the conference was Robert H. Wilson, who was recently elected secretary of the Eastern States Ice Association, replacing the late Samuel Freer.

Illinois Association Of Ice Industries

WM. D. WRIGHT, Secretary

THE appointment of B. F. Hartline as acting superintendent of Markets for the Illinois Department of Agriculture has been announced by Roy Young, director of the department. This is of interest to ice men of Illinois since Mr. Hartline has been active in promoting research on corn icing and other projects of interest to the ice industry.

A meeting was held with the West Frankfort Growers and Chamber of Commerce Agriculture Committee during the month at which time definite plans were laid for the 1952 project of sweet corn hydrocooling. Growers have signed, for over 70 acres and some of them have already planted more than the acreage pledged.

The 80-90 degree temperatures enjoyed for a few days during the first week in May gave the ice business quite a lift. Reports from Illinois distributors indicate increased sales for April 1952 over April 1951.

With the resignation of Sam Freer as secretary of the Eastern States Association the writer believes he can lay claim to being, in point of years of continuous service as secretary of a unit ice association, the number one boy in the USA and maybe the world. He is now in his 27th year as secretary of the Illinois Association.

Kansas Association Of Ice Industries

MATT SCHERER, Secretary

THE business outlook for the state of Kansas generally is good. All signs point to a good wheat crop and as we have had plenty of rain, there will be other good crops such as corn, oats, wheat and other feed crops.

The association had a booth at the retail grocers' meeting held at Emporia in April. Although the meeting was poorly attended, the ice booth got plenty of attention. It had displays of vegetables, meat and beverages on ice. Gardenias were distributed to the ladies, and ice literature was distributed on meat, poultry and vegetable icing.

Frozen Fruit and Vegetable Production Reaches All-Time High in 1951

FROZEN fruit and vegetable production reached a record total of 1,185.9 million pounds in 1951, according to the National Association of Frozen Food Packers. This total was 12 per cent greater than the previous all-time high of 1,059.3 million pounds, recorded in 1950.

While the frozen fruit pack declined 12 percent last year, this reduction was more than offset by the big 31 percent increase in frozen vegetable production. The 1951 frozen fruit pack amounted to 415.9 million pounds, as compared to 472.2 million pounds in 1950. The frozen vegetable total reached 770 million pounds in 1951 as compared with 587.1 million pounds in 1950.

These statistics were compiled from reports received from individual frozen food packers. The data given are for the commercial pack and do not include quantities produced in frozen food locker plants.

A summary of production since 1942 and details of frozen fruits and vegetable packs for the past three years appear in the tables that follow.

PRODUCTION OF FROZEN FRUITS AND VEGETABLES, 1942-1951

(In Millions of Pounds)

Year	Fruits	Vegetables	Total
1942	194 6	152 5	347 1
1943	187 3	207 9	395 2
1944	323 9	237 1	561 0
1945	427 0	308 0	735 0
1946	519 1	450 0	969 1
1947	343 5	346 2	689 7
1948	369 7	446 4	816 1
1949	354 0	563 5	917 5
1950	472 2	587 1	1,059 3
1951	415 9	770 0	1,185 9

Packers Oppose Price Control of Frozen Foods

OPPOSITION to continued price control in the frozen food industry was expressed May 16 to the House Banking and Currency Committee by C. L. Snavely, President, National Association of Frozen Food Packers. His testimony was presented as the Committee continued hearings on the Defense Production Act of 1950, as amended.

Mr. Snavely supported and amplified the position taken previously by the N.A.F.F.P. Board of Directors in adopting a resolution calling for suspension of frozen food price control. In reviewing the present situation, he called attention to the current stock position of the industry, and the big increases in production, both of which have eliminated inflationary factors in frozen food marketing. Mr. Snavely also cited retail price data showing that retail prices of frozen fruits and vegetables have been declining since December, 1950. He continued with a report on a N.A.F.F.P. survey which indicated that items representing 82 percent of frozen fruits and vegetables are selling below ceiling prices.

U. S. Standards for Grades Of Frozen Leafy Greens

THE U. S. Department of Agriculture has announced issuance for the first time of U. S. standards for grades of frozen leafy greens (other than spinach) to become effective June 12, 1952. These greens are: beet tops, collards, endive, kale, swiss chard, and mustard, turnip and dandelion greens.

The grades of frozen leafy greens are designated as "U. S. Grade A" or "U. S. Fancy" and "U. S. Grade B" or "U. S. Extra Standard." The grade of the product is determined by evaluating the factors of color, absence of defects, and character, in addition to consideration of requirements with respects to flavor and odor.

Mr. Snavely emphasized that "under the American system, and in the conditions in which this industry is now operating, the burden should be upon the Government to justify continuance of controls, and that it should have the positive obligation to suspend those which are not needed."

1951 PRODUCTION OF FROZEN VEGETABLES

(In thousands of pounds)

Item	1949	1950	1951
Asparagus	18,422	22,309	23,562
Beans, Green & Wax	58,523	65,529	81,650
Beans, Lima	87,949	85,988	108,020
Broccoli	45,233	41,028	48,768
Brussels Sprouts	23,455	22,439	22,476
Carrots	12,751	13,338	10,573
Cauliflower	21,655	12,339	22,428
Corn—Cut	37,076	32,998	44,549
Corn-on-Cob	17,563	10,069	8,772
Mixed Vegetables	15,904	15,241	26,088
Peas	113,273	152,275	195,541
Peas & Carrots	8,097	11,335	12,947
Pumpkin & Squash	8,337	8,325	12,723
Rhubarb	4,212	6,164	5,803
Spinach	62,307	52,806	97,878
Succotash	8,290	6,659	11,913
Miscellaneous Vegetables	20,451	28,259	36,348
Total	563,499	587,101	770,038

Source: Based on reports of individual packers, collected and compiled by the National Association of Frozen Food Packers.

1951 PRODUCTION OF FROZEN FRUITS AND BERRIES

(In thousands of pounds)

	1949	1950	1951
Fruits:			
Apples & Applesauce	52,268	48,013	28,772
Apricots	2,086	7,802	9,869
Cherries, Red Tart	70,989	104,459	99,282
Cherries, Sweet	2,965	742	2,251
Grapes & Pulp	3,119	15,189	4,799
Peaches	23,235	25,791	32,380
Prunes	5,297	5,144	6,791
Berries:			
Blackberries	15,186	8,973	14,574
Blueberries	14,036	10,900	13,921
Boysenberries	14,089	9,443	9,309
Currants	2,541	1,276	1,505
Gooseberries	44	138	136
Loganberries	3,386	2,639	2,419
Raspberries, Black	6,155	10,939	9,559
Raspberries, Red	25,682	20,439	19,414
Strawberries	107,600	192,732	157,729
Youngberries	626	318	146
Miscellaneous Fruits & Berries	4,717	7,239	3,090
Total	354,021	472,173	415,945

Source: Based on reports of individual packers, collected and compiled by the National Association of Frozen Food Packers.

Chicago Section, A.S.R.E.

THURSDAY April 10 was National Officers Night at the Chicago Section meeting of the American Society of Refrigerating Engineers. National officers present were: Edward Simons, president; R. C. Jordan and A. J. Hess, vice-presidents; D. K. Tressler, now a member of the Chicago Section, treasurer; M. C. Turpin, secretary, and Alfred Chadburn, assistant secretary.

Reviews Activities

President Edward Simons presented a review of the society's activities for this year. A large expansion, he said, is taking place in the refrigeration industry and allied fields. It is the job of the society to keep pace with this development and to serve it well. A reorganization, he said, has been made necessary especially among the functions and inter-relationships of the various technical committees for the purpose of adequately coping with these rapidly growing changes.

The present changes, he said, have been designed to produce a knitting together of section membership activities with a balance and fly wheel effect for the technical committees and other functional groups. The Society is also benefiting from a method of continuity which may be defined as that system of development produced by people working together over a period of several years. We have a great industry that will grow much greater and to meet this challenge the new coordinating committee is charged with the responsibility of organizing talent for use to meet this coming demand.

After business of the section was cleared, the role of the part played by low temperature refrigeration in the automotive industry was reviewed by W. E. Barnum of Westerlin and Campbell of Detroit. He said the early requirements on the use of refrigeration by the automotive engineer were limited to the "cold start test." The automobile was left in the zero degree fahrenheit room for three days before the motor starting test was made. They also discovered much about the over-all operation of the other components such as the crank case oil, batteries, heaters and defrosters.

Rooms such as these were necessary rather than to do the testing in winter weather. The main disadvantage in winter weather testing is that much valuable time is lost waiting for favorable weather, there is no control over the temperatures to be used and the number of tests per year would be limited. Although winter testing is still a must, indoor control testing can be readily used to reveal basic design defects with considerable saving of time and with a decided speed-up in the rate of automotive development.

The early system was soon improved so as to include forced air circulation and the use of liquid ammonia. Military testing introduced additional new requirements during World War II. Temperatures of 40 to 60 degrees below zero had to be used and a complete new redesign job for low temperature testing was necessary, including the use of air velocities up to 40 mph. Conditions today are still more drastic for temperatures in the range of minus 90 to minus 100 F. are necessary. In the early days a maximum of 20 hp was needed to supply 5.7 tons of refrigeration at minus 10 F evaporator temperature to hold a zero degree temperature in a room 36 ft. wide x 44 ft. long x 17 ft. high. Today a total of 275 connected horsepower in three stages is needed for the same size room operated at minus 90 F. with a refrigeration load of 50 tons. It is probable, he said, that still lower temperatures may be necessary.

March 2 Meeting

At the meeting of March 13 E. J. Robertson of the Research and Technical Division of Wilson and Co., Inc. reviewed the subject of prepackaged frozen meats. The most important discovery, he said, is that the method of cooking is much more important than the method of freezing. Differences due to the method of freezing were eliminated by handling all products directly from the freezer to the frying pan. Aside from the advantages of consistently duplicating fresh meat eating qualities, there are other advantages important to the consumer and to the frozen meat business. The utility and convenience of frozen prepackaged meats is much greater. Advance planning to allow for thawing time is not necessary. There is no drip mess and there are no bacteriological problems which could arise due to poor consumer handling. Cooking control is better and the time involved for the preparation of steaks, chops, and hamburger is only five to ten minutes longer and the inconvenience of the thawing period in advance of cooking is eliminated.

Packaging is also more important than are the freezing methods when the above cooking procedure is used. The essential feature in the wrapping of prepackaged meats to be frozen is that the wrapping material have a low moisture vapor transmission rate since this prevents dehydration, thereby retaining the original fresh meat bloom. The present limiting factor in the freezer storage life of meat is to be found in the degree of oxygen protection offered by the packaging material. Better oxygen protection is needed. An example was given of a steak vacuum packed in a glass jar that was as good after one year's storage as it was when freshly packed. Packaging in all flexible wrapping materials must be tight and neat and so well done that it is almost free of air pockets for otherwise visibility is lost and these air pockets function as dehydration chambers.

The temperatures used in this freezing work varied from 0 F to minus 50 F and several methods of freezing were tried and compared such as plate freezing, blast freezing, still air freezing and coil shelf freezing.

All frozen products are packed in corrugated or solid fibre shipping boxes immediately after freezing and sealed ready for shipment. The advantage is that the shipping box functions as an additional moisture vapor barrier and also as an insulator which will reduce the heat flow due to storage room temperature fluctuations. One other significant point is that the product is at no time exposed to the harmful effects of light.

Frozen for Use

It was emphasized that meat is not frozen to keep in storage; consumer packaged meats are prepared to be sold and used. Visibility, neatness of cut and tightness of wrap are necessary requirements for frozen meat sales. Retention of fresh meat flavor is essential and a long storage life is not recommended.

Meat packaged at the packing house level in volume quantities should offer economies as well as convenience to the consumer. The dinner plate yield from carcass weight will be less than 60 percent of the shipped weight. There is a loss of 40 percent as bone, fat and trimmings which are now disposed of at a loss at the expense of the consumer. These figures were given to show that economies in frozen meats should result in transportation, storage, handling and packaging in favor of the consumer. The consumer will also gain other cost advantages in that these wasted materials can be converted into other useful products.

Refrigerated Warehousemen Annual Meeting

(Continued from page 24)

Another member of the panel stated that commodity financing is an important phase of American business which depends on bankers more than in any other country. Producers, particularly, lean heavily upon the banker for financing the movement of crops. Because turnover is inevitable, negotiable warehouse receipts are the cornerstone of public warehousing and their integrity must be maintained.

Discussing the common practice of accepting telephone orders for delivery and getting a signed release afterwards, confirmation to be mailed, some warehouses will release non-negotiable but not negotiable receipts.

The question was asked as to whether, when value of the merchandise was questionable and receipt has been transferred to the bank, the warehouse is liable. Answering this, it was stated that when merchandise showed any signs of deterioration sush as thawing, that is noted on the warehouse receipt since the banker also is interested in anything affecting quality. Re-cooperage, also should be noted on the receipt.

Small town bankers, it was pointed out, are generally informed on the value and validity of warehouse receipts, but their procedure is somewhat different in that they depend more on personalities and knowledge regarding the business and financial integrity of the houses involved. Thus they do not always follow strictly the practices of city bankers.

In case of loans on commodities stored under non-negotiable receipts, some bankers send a duplicate bill, particularly on arreages, to the bank but when merchandise is transferred to the bank, arrearage charges go to the owner.

The old question was raised as to whether warehouses should make loans on commodities or leave them to the bank. On this there appeared to be a variety of procedures. Some make loans while others encourage customers to deal with the bank. Others conceive the idea of making loans as a part of their business. To make loans successfully the warehouseman must have adequate records and checks on the commodities on which loans are made. It is very important to recognize the sanctity of negotiable warehouse receipts, and to educate employees and the banks, also customers, as to the provisions of such receipts.

Resolutions

Report of the Resolutions Committee by E. M. Dodds, Kansas City, Mo., was presented, offering the following resolutions, each of which were adopted:

Approving the American free enterprise system and asking the National Association of Refrigerated Warehouses to oppose erection or establishment of refrigerated warehousing facilities by the government.

Asking exemption from provisions of price control regulations since normal competition affords ample check against increasing prices and the association was asked to take steps to have prices decontrolled.

Commenting and endorsing the work of The Refrigeration Research Foundation and expressing appreciation to Director H. C. Diehl for the results accomplished.

Approving the convention program, especially the panel discussion expressing thanks to government representatives and industry members for participation in these discussions.

Expressing thanks to retiring president, J. P. Johnson and to Wm. Dalton and members of his staff for carrying on the work and service of the association during the past year.

Following installation of officers as a closing feature of the N.A.R.W. sessions, J. L. Gagini, past president, presented J. P. Johnson, retiring president, with a token of esteem as an attempt on the part of the members of the association to express appreciation for his accomplishments. This token was a movie camera.

American Warehousemen's Association

(Continued from page 17)

group of past presidents of the association. He cited some of the achievements of the A. W. A. during the past year. Among these were cooperation with the armed forces and other government agencies; working with the United States Chamber of Commerce; work on national legislation; safeguarded and advanced the interests of the warehousing industry; cooperation with other allied industries.

W. A. Morse, as treasurer, reported on the finances of the association which showed all bills paid to date, with an adequate balance on hand.

Resolutions

Two resolutions were presented by the Resolutions Committee and adopted. The first called for removal of Price Control regulations of the warehousing industry on the ground that it is not needed. The other called attention to the record registration and expressed thanks to all who had arranged the convention details. These resolutions were adopted.

Another resolution presented on behalf of the Executive Committee of N. A. R. W. called attention to recent irregularities of grain storage under the Commodity Credit Corporation, and asked that members of Congress be informed that no public warehouse was involved and that the public warehousing industry disapproves of such irregularities. This resolution was adopted.

Refrigeration Research Foundation

(Continued from page 28)

fluid milk but its principal difficulty is bulkiness. Fluid frozen milk (not concentrated) is being produced commercially and a considerable volume is being used by the Army and Navy but its possibilities of gaining a general market are not too good because of the expense of shipping and refrigerating in retail markets.

Concentrated milk, Dr. Coulter said, is not a new idea since condensed and evaporated milk have been processed and sold for many years. The research work on concentrated frozen milk at the University of Minnesota has been in progress since 1950. He pointed out that the United States produces about 120 billion pounds of milk a year, of which about one-third is consumed as fresh milk. If some way could be found to preserve and market it, frozen milk could be processed in milk producing areas and sold in the low producing areas at market price. But so far this problem has not been completely solved.

Board of Governors

Accepting the report of the Nominating Committee, the following members of the Board of Governors were elected:

Representing the Public: Dr. Eugene Auchter, Honolulu, Hawaii; Dr. Laurence V. Burton, New York; Dr. Louis B. Howard, Urbana, Ill.; Col. Paul P. Logan, Chicago, Ill.; Dr. Samuel C. Prescott, Cambridge, Mass.; Dr. William C. Schoenfeld, Corvallis, Ore.

Representing the industry: Wm. C. Hudlow, Chattanooga, Tenn.; L. M. Ashenbrenner, Toledo, Ohio; M. W. Young, San Francisco, Calif.; K. T. Stepleton, Lafayette, Ind.; L. E. Kern, Portland, Ore.; Wm. A. Sizer, Chicago, Ill.; H. C. Emmerson, Bridgeton, N. J.

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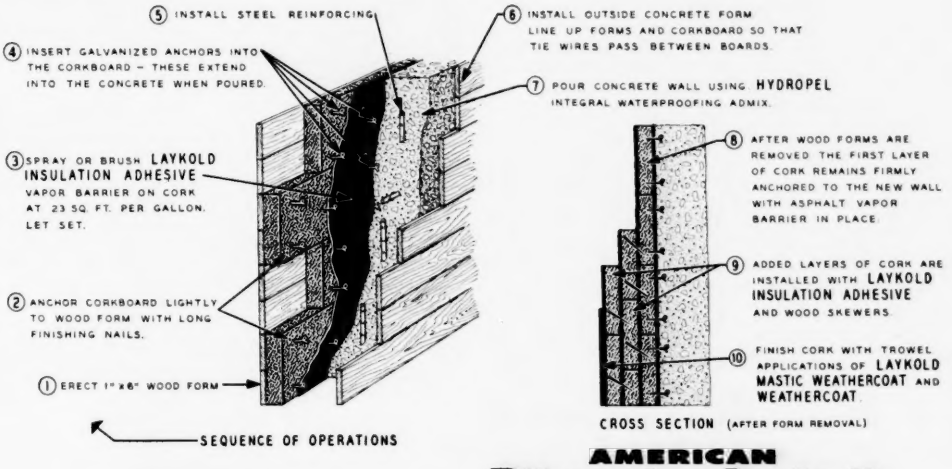
5 INSTALL STEEL REINFORCING
6 INSTALL OUTSIDE CONCRETE FORM LINE UP FORMS AND CORKBOARD SO THAT TIE WIRES PASS BETWEEN BOARDS.
4 INSERT GALVANIZED ANCHORS INTO THE CORKBOARD – THESE EXTEND INTO THE CONCRETE WHEN POURED.
7 POUR CONCRETE WALL USING HYDROPEL INTEGRAL WATERPROOFING ADMIX.
3 SPRAY OR BRUSH LAYKOLD INSULATION ADHESIVE VAPOR BARRIER ON CORK AT 23 SQ. FT. PER GALLON. LET SET.
8 AFTER WOOD FORMS ARE REMOVED THE FIRST LAYER OF CORK REMAINS FIRMLY ANCHORED TO THE NEW WALL WITH ASPHALT VAPOR BARRIER IN PLACE.
9 ADDED LAYERS OF CORK ARE INSTALLED WITH LAYKOLD INSULATION ADHESIVE AND WOOD SKEWERS.
2 ANCHOR CORKBOARD LIGHTLY TO WOOD FORM WITH LONG FINISHING NAILS.
10 FINISH CORK WITH TROWEL APPLICATIONS OF LAYKOLD MASTIC WEATHERCOAT AND WEATHERCOAT.
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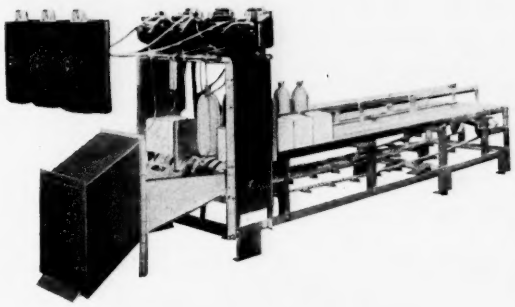

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Report on Maintenance Of Cooling Tower Lumber

A PROGRESS report with interim recommendations on the maintenance of cooling tower lumber has been issued by Technical Subcommittee No. 3 of the Cooling Tower Institute. The following general recommended practices for maintenance of cooling towers are presented in the light of the best knowledge to date:

1—For the control of delignification and, possibly to some extent, fungal infection, cooling tower water should be kept at a pH preferably between 6.5 and 7.5. Although pH is not the sole criterion for delignification, conformance within the above limits should eliminate the constituents in most waters which lead to delignification. Suitable corrosion inhibitors should be added to the water to protect metal equipment in accordance with accepted practices.

2—Where halogen, viz. chlorine or bromine, algicides are employed, residuals in the water should not be allowed to exceed 1 to 2 ppm, in order to avoid the oxidizing effect of excess halogen on cooling tower lumber

3—In most cooling towers some algicide should be used for the proper protection of metal cooling equipment and the towers. At this date the committee does not wish to make any specific recommendation with regard to preferable algicides, which may be halogens, pentachlorphenol, or quaternary ammonium salts.

4—No recommendation can be made at this date for the elimination of fungus infections, with the exception that infected lumber when discovered should be removed immediately from the tower and replaced with new lumber. It is fully anticipated that the investigations now being conducted by the committee will lead to satisfactory solutions to the fungus infection problem at a later date.

5—General good housekeeping is essential to the proper operation and maintenance of cooling towers. Proper maintenance of cooling towers should include regular periodic inspections, at which time scale and encrusted salt should be removed, water boxes, basins, and screens should be thoroughly cleaned, and all debris and detritus should be removed.

It is believed that if these practices are followed, destruction of cooling tower lumber will be minimized or, in some cases, even prevented, and that extended trouble free operation will be promoted. As the work of the Subcommittee continues, it is the intention of the Institute to issue further memoranda at intervals when it is felt that sufficient data have been accumulated.

CONVENTION CALENDAR

AMERICAN SOCIETY OF REFRIGERATING ENGINEERS

June 1-4, 1952
Biltmore Hotel, Atlanta, Ga.
M. C. TURPIN, Secretary

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

November 12-14, 1952
Adolphus Hotel, Dallas, Tex.
A. R. CARLSON, President

ASSOCIATION DIRECTORY

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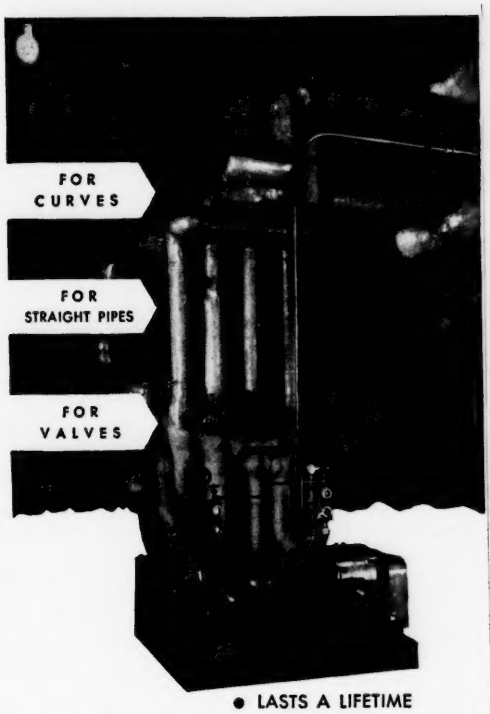

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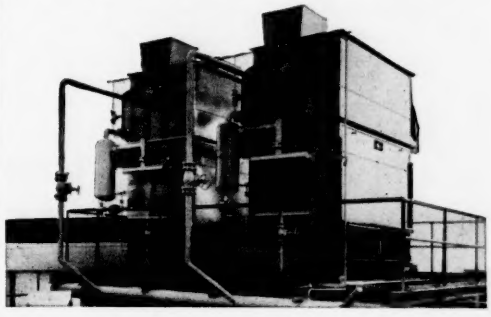

New Plants and Improvements

California

Claremont, Calif.—Grading of the site was started recently for a $300,000 expansion of Union Ice Company's facilities here. A 90x240 ft. stucco building will be added, increasing the plant's size by about 50 percent. Zero temperature storage space will be provided for 6,000 tons of frozen citrus concentrate. The one-story structure will be insulated with cork and rock wool and refrigerated by ammonia gas with convector coolers. All storage will be on pallets, handled by electric fork-lift trucks.

Guadalupe, Calif.—Construction of a $230,000 vacuum precooling plant for lettuce will be started in July, C. B. Ferguson, manager of the Puritan Ice Company has announced. The plant will have a loading capacity of 380 to 400 crates compared to the firm's present output of 300 to 320 crates.

Kansas

Kansas City, Kans.—Permit for a ice plant has been issued to the Mid-West Cold Storage and Ice Corp. The four-story reinforced concrete structure, estimated to cost $150,000 will rest on 25-foot high concrete stilts, in an area where the floodwaters of last July stood at a depth of 10 feet. The building will measure 64 by 129 feet.

Washington

Auburn, Wash.—Augmented cold storage equipment and facilities are to be added to the plant of the Auburn Packing Co. Inc. in a 55x103 foot addition to provide new capacity for beef cooling, as well as cold storage and aging. The masonry structure planned, will be cork insulated throughout under a steel frame roof.

Wyoming

Laramie, Wyo.—Pacific Fruit Express Company has completed construction of a 400 ton ice manufacturing plant and storage room with fully automatic equipment. The Associated Refrigerating Engineers of Los Angeles were contractors for the new plant, which cost in excess of $400,000.

New Incorporations

Oklahoma City, Okla. — Fifty-year charter of incorporation has been granted Oklahoma Cold Storage, Inc., it was announced recently. Incorporators are John L. Bear, Wichita, Kans.; Sam Sigman and Morris Sigman, Denver, Colo. Capital stock was listed at $200,000.

Seattle, Wash.—Portion Pack Inc. has been incorporated for production of frozen foods, ice cream and other products. Capital is set at $70,000 by the incorporators: Lily I. Wells, of Everett, Wash., R. B. Allen and Lee Olwell et al.

Sheboygan, Wis.—Sheboygan Cold Storage & Warehouse Corp. has been formed here, with an authorized capital stock of 1,000 shares of common at a par value of $100 per share. Incorporators are Robert L. Rohde and Lawrence G. Butler.

Fires and Accidents

Mountain View, Calif.—The Union Ice Co. plant at Villa and Mariposa Sts., was damaged by fire recently, the damage restricted almost entirely to the roof and attic. It was believed started by workmen cutting a pipe near the roof with a torch. A thick matting of redwood bark insulation ignited and smoldered.

Washington, D. C.—A new incompleted building of the Regal Ice Cream Co. factory at 5013 Minnesota Ave., N. E., was almost entirely demolished by a fire which was started from a spark from a welder's acetylene torch which ignited fresh paint on a refrigeration tank. Fire spread quickly to a 4-inch layer of insulating cork on the walls and partitions of the building. At least three-quarters of the building will have to be rebuilt. Damage was estimated at $60,000. Firemen said a sprinkler system had been installed in the building, but had not been hooked up yet.

Salina, Kans.—The CK packing house, 1300 W. Elm suffered a fire loss of approximately $1700; $200 to the building and $1500 to the contents. About 3300 lbs. of hams and shoulder picnics being smoked at the plant apparently became overheated and ran a stream of grease down to the fire pit. The fire climbed the grease to the sizzling meat and the interior of the smokehouse caught fire.

Wichita, Kans.—Nine persons were injured, two of them critically, in an explosion at the Wichita Ice & Cold Storage Company plant recently. Firemen said a malfunction of a safety valve on a 45 ton ammonia compressor was the cause of the blast which tore off the roof and part of the front of the two-story brick building.

McComb, Miss. — An estimated $500,000 damage was caused by fire at the huge plant of the Southern United Ice Co. plant. The worst of the blaze spread through the plant's ice-storage section. The plant served strawberry raisers in the McComb-Hammond, La., area who need ice to preserve ripening berries. Part of the loss is covered by insurance according to George Davis, manager.

Hoboken, N. J.—Fire, the second within a week, threatened the large plant of the Rubel Ice Co., 1600 Park Ave. It appeared that the blaze was caused, as was the previous one, by a careless workman dismantling machinery, according to Fire Chief Bonin. A spark from an acetylene torch just before workmen quit at 5:00 p. m. apparently set fire to insulation of cork and tar on a pipe line running from the boiler room. It smoldered for three hours before breaking out and had traveled along the pipeline from the cellar to the third floor.

Altoona, Pa.—The former Blair Ice and Cold Storage company property, occupied by the A. E. Namey, Beer distributor, at 3106-24 Fifth Avenue, was destroyed by a fire, estimated at $23,000. Firemen experienced difficulty due to bursting ammonia tanks, but were able to keep the flames from spreading to adjoining properties.

Sales and Reorganizations

Red Bluff, Calif.—The Cone Ice and Cold Storage Co., founded in 1888 by the late D. S. Cone, has been sold by Jack Armstrong and Richard Marshall to Oliver Chatfield of San Francisco.

Elgin, Ill.—The Jefferson Ice Co. building located at 2 Kimball St., was sold recently to the W. R. Meadows, Inc. who have completely remodeled the structure.

Georgetown, Ky.—John E. Hogan has purchased the ice plant of the Home Dairy Co., North Water Street. Daily deliveries will be made in Georgetown with tri-weekly deliveries to Great Crossing and Stamping Ground.

Paris, Mo.—Following the closing of the municipally-owned ice manufacturing plant here, the Missouri Ice Co., owned by O. L. Wright of Shelbina, took over sales and distribution of ice in this city. Some ice still remained in the storage compartment at the city ice plant but this is to be disposed of and the plant completely closed down and the equipment sold.

Palisades Park, N. J.—The Rubel Corporation has sold its ice plant at 208-16 Thirteenth St. to Globe Products, Inc., a paper salvage concern.

Jersey Shore, Pa.—Purchase of the Crystal Ice and Coal Co. from Raymond Lord and Blake E. Lansberry by Anthony A. Joseph V. and Vincent J. Grieco, was announced recently. Offices of the new concern, to be known temporarily as the Crystal Ice Co. will be located at the North Wylie St. building. Later, the name of the company will be changed to Grieco's Beverages, Inc.

DEATHS

PATRICK WALSH, formerly with the Seaboard Terminal Refrigerating Company, Jersey City, N. J., died March 8. He was 67. Mr. Walsh was born in Austin, Nevada and had lived in Jersey City for 40 years. He leaves his widow, Mrs. Catherine Walsh, five sons and a daughter.

WALTER G. EISENMAYER, former president of the Los Angeles Ice & Cold Storage Company, died April 27, at St. Vincent's Hospital. He was 48 and had retired from business 14 years ago. He was a 32nd degree Mason.

MINOR R. BELL, retired ice dealer of Louisville, Ky., died March 2. He was 58. Before his retirement in 1937, he was employed by the Ridley Ice Company.

EDW. DOERHOEFER, 55, Downers Grove, Ill., for 31 years traffic manager for the Central Cold Storage Co., Chicago, died April 8. He was a member of the Chicago Traffic Club.

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What's New

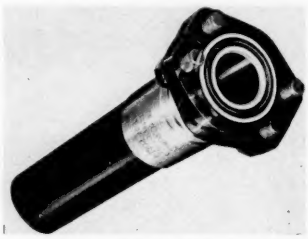
MACHINERY
APPLIANCES • PROCESSES

Split Flange Clamp

A NEW split-flange clamp for hydraulic hose assemblies has been developed by the Anchor Coupling Co. Inc., Libertyville, Ill. The new clamp is offered as an important new development for the hydraulic field because it eliminates threaded joints, it prevents leaks, and it is easy to use.

A wide selection of sizes is available for use with either clamp or pressed-on type couplings in straight or angle styles for one or two wire braid hose from ½ inch ID through 2 inch ID. It can be used for high, medium, or low pressure service, suction return lines, etc.

For assembly, all that is required is a small, convenient, automotive-type wrench. The seal consists of an O-ring, which has proven successful in other hydraulic applications, eliminating the need for tapered threads. There is no wedging action to cause distortion in valve bodies, cylinders, or any other piece of hydraulic apparatus. The bolt centers are located to evenly distribute the forces and prevent tilting of the clamp halves.



New split-flange clamp for hydraulic hose assemblies.

The ribber clamps are structurally strong to withstand pressures of high pressure hose. This feature alone helps maintain a permanent, leak-proof seal so that the split-flange type clamp is suited for tough service.

New Kooler Kubes Cut Refrigeration Cost

USE of Kooler Kubes instead of loose salt has substantially cut the time and cost of serving cooler units at the Marhoefer Division of the Kuhner Packing Company, Muncie, Ind. And, at the same time, the cubes have enabled the firm to save additional money on the amount of salt used in the refrigerating operation.

Kooler Kubes are International Salt Company's new, highly compressed cubes of pure salt which make it easy to maintain clean brine at proper density, free from the impurities that frequently clog brine systems and spray nozzles when loose salt is dumped into unit coolers, cold air diffusers, spray coolers, and spray deck refrigeration.

Kooler Kubes have also reduced the amount of salt needed for the refrigerating system. When loose salt is used in any refrigerating operation

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M-337

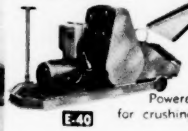
The M-337, known as "Mobil-Icer," is ideal for team track icing with a capacity of 55 tons per hour. Powered by an 8-cylinder Ford industrial engine.

G-100

The model G-100 rolls easily on 3 rubber-tired, ball bearinged wheels. Powered by an 8 cylinder Ford industrial engine. Capacity 55 tons per hour.

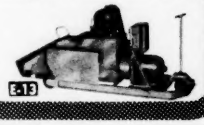
G-35

The G-35 crusher-slinger is for icing operations where its capacity of 750 pounds per minute is adequate. Takes full 300 pound blocks.



E-40

The E-40 combines high capacity with the quietness and dependability of the electric motor. Capacity 55 tons per hour. Powered by a 10 HP electric motor for crushing, 30 HP motor for slinging.



E-13

The E-13 has a capacity of 600 pounds per minute. Uses one 3 HP and one 10 HP electric motor.

The "Mobil-Icer" is here icing a carload of carrots at the rate of 5 tons every 7 minutes. The trailer mounted "Mobil-Icer" is ideal for team track icing as it can be towed by the truck carrying the ice. The unit is powered by an 8-cylinder Ford industrial engine. Capacity is 55 tons per hour.

There is a Tri-Pak ice crusher-slinger for every icing need. Whether you ice fishing boats, top ice carloads of vegetables, or re-ice refrigerator trucks, one of Tri-Pak's five sturdy, dependable units is size-rated for your job. All Tri-Pak crusher-slingers save labor by taking full-sized 300 pound blocks of ice. You can depend on these well engineered, sturdily built icing units.

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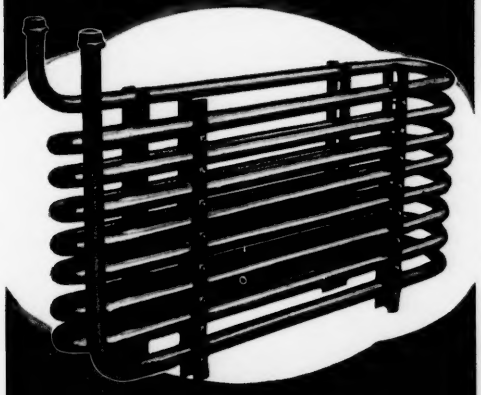

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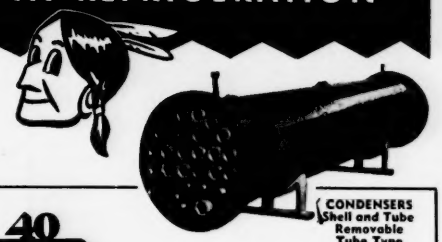

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Get the benefits of Howe's 40 years of practical, field-proved refrigeration knowledge, and their ruggedly built, trouble-free equipment. You save money, space, labor, time—with Howe individually engineered installations, regardless of size. Write for free booklet, or without obligation consult Howe engineers on your refrigeration problems!

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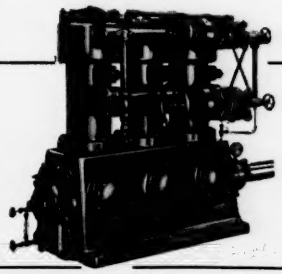

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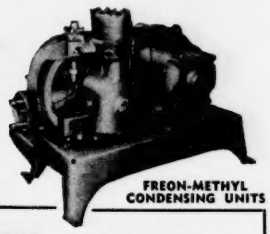

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there is always a certain amount of spillage while the sale is transported through the plant, and again when it is dumped into the units. Since Kooler Kubes are firm, hard cubes of salt, each one of which has hand grips on the sides for easy handling, they eliminate this loss from spillage.

And, because each Kooler Kube weighs 50 pounds, they make it possible to eliminate the further loss which comes from guessing how much salt to dump into the unit and then dumping in an excessive quantity. With these cubes the attendant always knows that he is adding exactly 50 pounds of salt. A further advantage springs from the fact that the cubes are compressed so firmly that they dissolve at an even rate, without disintegrating.

Fiberglas Pipe Insulation

DUAL temperature pipe insulation, a new Fiberglas insulation for pipe lines operating at low temperatures or at alternate cycles of high and low temperatures is made of fibrous glass bonded with a thermosetting binder and is accurately performed in easy-to-apply hemi-cyclinders and segments that fit all standard pipe and tubing sizes.

A vapor barrier, composed of laminations of asphalted kraft paper and aluminum foil adhered to the Fiberglas insulation with a bituminous adhesive, provides effective condensation control on cold lines passing through warmer temperatures and permits exceptionally economical operation of such pipes.

When used as a vapor barrier, the dual temperature insulation jacket prevents condensation on the surface of pipes and increases storage space by eliminating dripping in the area below the pipes.

To seal the end lap joints between sections, a four-inch strip of vapor barrier paper is supplied. These strips, together with the jack flaps, are sealed with Fiberglas vapor barrier adhesive. If desired, metal bands may then be placed at the edges of each end lap and in the center of each section.

Dual temperature insulation may be used on pipe temperatures from sub-zero to 25 degrees Fahrenheit. The insulation has been designed for indoor use, but if pipes must run outdoors, a 35-pound roofing felt jacket should be placed around the vapor barrier and sealed for additional protection against the weather.

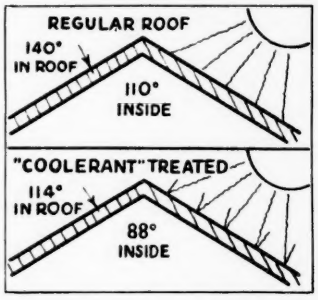
Insulation on pipes more than 12 inches in diameter is furnished in three segments. Soft copper wire is used to hold the segments of insulation in place until the vapor barrier jacket, supplied separately for these sizes, is applied. The vapor barrier is lapped and sealed over the insulation with Fiberglas vapor barrier adhesive.

After placing insulation on pipe, the flap that has been coated with vapor barrier adhesive is brought over the top and pressed into place evenly so that the vapor barrier remains intact.

Tropical Roof Coolant

ACCORDING to The Tropical Paint and Oil Co., Roof Coolerant, brushed or sprayed by unskilled labor immediately reduces below-roof temperatures to the comfort zone by deflecting up to 75 percent of the sun's radiant heat. Tropical Roof Coolerant consists of large flakes of metallic aluminum applied with a special liquid bond, creating a complete, seamless, silver blanket which throws back the sun's heat. While conventional aluminum paints quickly stain and discolor on bituminous roof surfaces, Tropical Roof Coolerant stays bright. Tests show that when it is 96 degrees in the sun, temperature within the roof structure will build up to 140 degrees, with a below-roof working zone temperature of 116 degrees. The same day that Tropical Roof Coolerant is applied, users have found as much as 26 degrees improvement in both roof and below-roof temperatures.

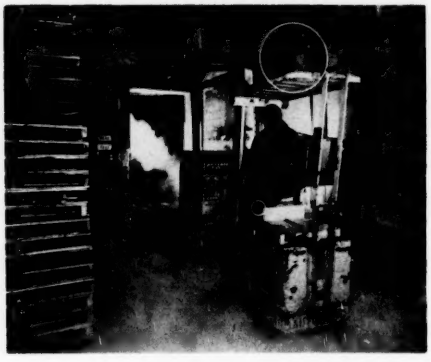
Cold storage plants, factories, retail show rooms, department stores, hotels, schools, churches and others are using this coolant to obtain living and working comfort during hot weather.



This diagram illustrates the action of Roof Coolerant in reducing heat inside buildings. Users report as much as 26F improvement in roof and below roof temperatures after application of Tropical Roof Coolerant.

New Electronic Door Opener

PRODUCTION of a new industrial electronic door operator that opens and closes plant doors by remote control is announced by the H. W. Crane Company of Chicago. Specifically designed for fork trucks, delivery trucks, fleet cars and other vehicles that must pass through the same plant door many times. The plant doors are raised or lowered by pushing a button, conveniently located on the dash of the truck or car. On fork trucks and other vehicles without dash boards, the button is located on the side of the seat where it is within convenient reach of the driver. This equipment was previously used only on residential models, installed in home garages. Principal modification is the use of heavy duty electric switches to take care of heavier traffic. With this unit considerable savings may be made in man hours ordinarily required to open and close doors.

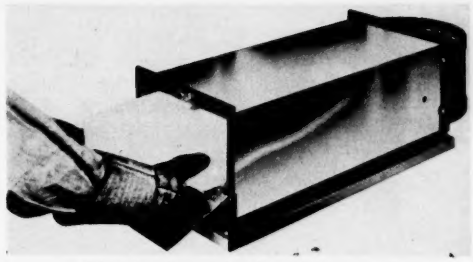


One of the first installations of Crane's Remote Control Industrial Door Operator was in a cold storage warehouse, for the storage of frozen foods. Such an installation enabled the plant to maintain a more satisfactory and economical temperature level. This unit also reduced the amount of hours spent during the day opening and closing heavy insulated doors.

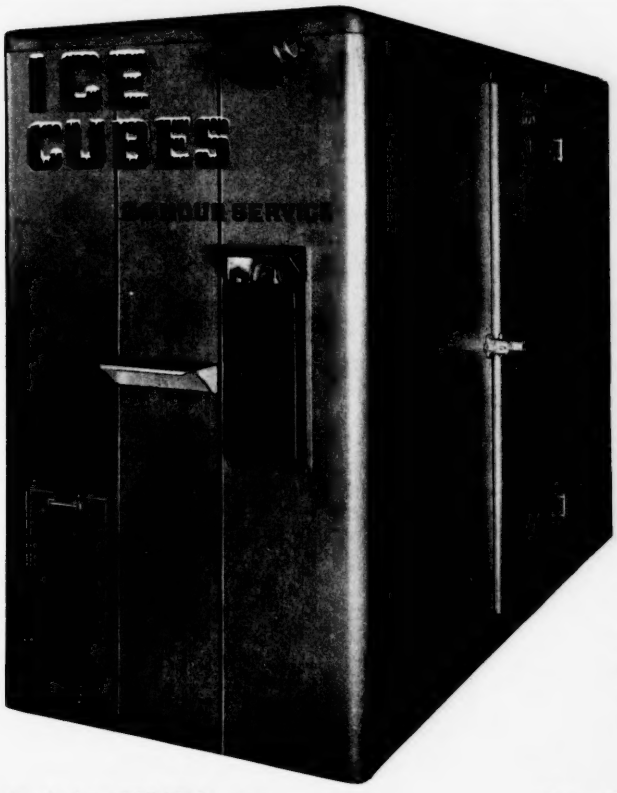
New Dry Ice Bunker For Smaller Trucks

A SMALLER, more compact dry-ice truck bunker has been developed by Foster-Built Bunkers, Inc., of Chicago. Designed to fill the need for effective, economical refrigeration of smaller trucks such as the Vanette and Metro types, the new Foster-Built "Refrigerette" cools loads of candy, ice cream bars, bakery goods and other similar merchandise. Especially interesting to florists will be the fact that this new unit can be supplied with a sealed dry-ice compartment featuring outside venting of the CO_2 gas, assuring safe, effective cooling of fragile flowers and plants. The "refrigerette" is also very useful in cooling larger truck areas where only token refrigeration is required, or where headroom is at a premium.

The new Foster-Built "Refrigerette" measures 10 inches high, 13 inches wide, and 32 inches long. Unit is designed to use dry-ice blocks of ½-thickness, which makes for a considerable reduction in unit height. Weight is approximately 30 lbs.



The New Foster-Built "Refrigerette"



The NEW POLAR CUBED and CRUSHED ICE VENDING STATION

Belt Capacity— 50 ten-pound bags

Storage for 200 ten-pound bags.

POLAR Products are built of the finest materials both *externally* and *internally*.

Patented—Design Patent Applied For

Check these POLAR features:

1. Completely covered with embossed aluminum.
2. Armstrong fibreglas insulation.
3. Aluminum foil vapor seal paper.
4. Automatic electric defrost.

ALL of these special POLAR features are included in the new Premium ice vending units:

1. Gives maximum utilization of refrigerated space. Ice can be bagged in station.
2. Fits in a small space, easily placed. Cabinet is 8'-10" long, 6'-6" high, 46" wide. Specially suited for heavily populated downtown locations.
3. Shipped ready to operate. Equipped with front light and time clock.
4. Beautiful in appearance. Identical material as used in regular POLAR line.
5. One piece aluminum weatherproof roof.

Write for free literature on our complete new line of POLAR Ice Stations and Vendors.

REFRIGERATION ENGINEERING COMPANY • Montgomery, Minnesota

7 reasons why THERMOBANK by Kramer is the Standard of the Industry

THERMOBANK

FOR AMMONIA

The unequaled completely automatic defrosting system for temperatures below 32°

1 **COMPLETELY AUTOMATIC**
It requires no manual attention. It is as automatic at low temperatures as is a 40° system.

2 **PART OF LARGE SYSTEM**
It becomes part of large systems without affecting the operation of the remaining evaporators.

3 **MAXIMUM EFFICIENCY**
Positive operating economy is provided by a "frost-free" coil, using the patented KRAMER ICE COAT CONTROL.

4 **FLOOR SPACE ECONOMY**
Compact, the KRAMER AMMONIA THERMOBANK takes no valuable floor space. All defrosting devices are outside the refrigerated space.

5 **SIMPLICITY**
Minimum controls—standard, time-tested and easily obtainable—are used in the KRAMER AMMONIA THERMOBANK.

6 **NO DRAIN FREEZE-UPS**
Heated drain pan and drain during defrost eliminates ice accumulation and freeze-ups of the drain line.

7 **TEMPERATURE CONTROL**
Uniformity of temperature is made possible by the short-time defrost, characteristic of THERMOBANK.

WRITE NOW FOR BULLETIN NO. TA-182

KRAMER TRENTON CO.
Trenton 5, N.J.

New Rubber Mat With Radiant Heating

A NEW rubber mat with built-in radiant heating unit has been developed by the mechanical goods divisions, United States Rubber Company. It has been tested

New Rubber Mat with three-way switch.

successfully in theatres, hotels, warehouses, police booths, toll booths, and unheated or refrigerated areas of industrial plants to provide greater comfort for employees who encounter cold working conditions on the job. It operates on standard 110-volt current. Card has three-way switch to control temperature.

Vending Equipment

Fresno, Calif.—A new S & S vending station has been installed by Fresno-Madera Ice Co.

Watsonville, Calif.—Regal Petroleum Gasoline Corp., operators of self-serv Delux petroleum stations has installed a new S & S vending station here and at Santa Cruz.

Orillia, Canada—Orillia Ice Co. of this city is now operating newly installed S & S equipment.

Fairfield, Conn.—Crystal Ice of this city is now opera a new S & S ice vending station.

Doraville, Ga.—Community Ice & Fuel Co. last month installed new S & S vending equipment.

Indianapolis, Ind.—Brightwood Fuel, Inc., recently installed a new S & S ice vending station.

Chestertown, Md.—Rock Hall Ice Co. is now offering 24-hour ice service with new S & S ice vending equipment.

Ferndale, Mich.—Detroit City Ice & Fuel recently installed two new S & S vending units.

Meadville, Miss.—Meadville Ice & Storage Co. of this city is now operating new S & S ice vending equipment.

Independence, Mo.—Independence Ice & Creamery Co. has installed additional S & S ice vending units.

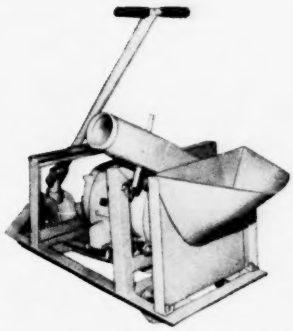
Farmington, N. Mex.—F. L. Schrieber of this city recently entered the retail ice business by installation of several S & S vending stations.

Cincinnati, Ohio—City Products Corp. last month installed additional S & S selling units.

Capture that Truck-icing Business With a Low-Priced

ESKIMO SLINGER

...with Your Present Equipment



This Eskimo Slinger meets the need for the company that needs a slinger to get truck icing business but cannot afford to tie up his money in an expensive piece of specialized equipment that is used only a few times a week. Get the most out of your present equipment . . . fits under most crushers easily. Get business you could not handle before. There is more and more of this type of business to be had. Get it and keep it. Easily moved on the rubber wheels—portable. After use, move it out of the way. Ideal for the tube ice manufacturer who needs no crusher. Uses 5 hp motor. We can mount a crusher on this unit so both crusher and slinger are portable if you desire.

GET POULTRY ICE BUSINESS . . . The above unit may be used in large poultry plants for both putting ice in the coating tanks and packing crates. We will give you more information on request.

WRITE FOR PRICE AND SPECIFICATIONS

BALLARD SALES COMPANY

Post Office Box 1121 FORT WORTH, TEXAS Phone FOrtune 8474

in

Cooling Towers, Condensers—
Wherever Water Is Used

Use Wright Water-Conditioning Chemicals in refrigerating and air-conditioning equipment — wherever water is used—to control scale, corrosion and bacteria. Increase the efficiency and life of equipment and be assured of long, maintenance-free performance.

WRIGHT CHEMICAL CORPORATION

Wright CHEMICALS

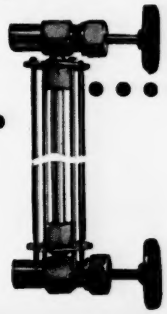
Specializing in Water Conditioning
GENERAL OFFICE AND LABORATORY
633 West Lake Street, Chicago 6, Ill.
OFFICES IN PRINCIPAL CITIES
Sole Distributor of Nelson Chemical Proportioning Pumps

SHANK **REFRIGERATION PRODUCTS**

ALWAYS DEPENDABLE!

SEMI-STEEL SHUT-OFF VALVE

Highest grade non-porous metal—full size ports—clean cut threads. Back seated stem — Shank design base—perfect alignment. Long life packing ring.



ALL-STEEL GAUGE SETS

All-Steel Construction. Automatic shut-off of liquid in case of glass breakage. Composition packing rings give long life, no-leak seal.

If your jobber doesn't stock—write

CYRUS SHANK CO.

629 W. Jackson Blvd. Chicago 6, Ill.

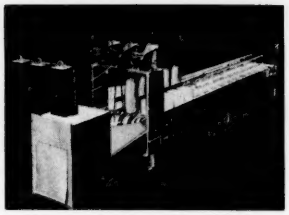
New Vending Machine For Sized and Block Ice

A NEW ice vending machine, handling three sizes of ice, is now in production by the Perfection Ice Scoring Machine Company of Fort Worth, Texas.

The new chain conveyor-fed machine will handle different kinds of processed ice, either bag or block, and will carry blocks up to 50 pounds.

The new machine, delivered in units and easily assembled with bolts, has a main frame construction of two by two by 3/16 angle iron supported by ¼ by 2 inch on the sides. A heavy steel frame supports the motors at the front of the machine. The frame for a three deck machine is approximately 39 inches wide, and machines can be built any length. Height of the machine for standard wall thickness is 15 inches. In instances where wall thickness increases, the height is raised by adjusting the legs.

Positive delivery of each cake or bag of ice is assured by a number 55 pusher link behind each item. Chains are made of malleable steel and are supported by 1 3/16 inch cast iron bearings with 18-tooth cast iron sprockets. Each machine up to 18 feet in length is equipped with ¼ h.p. 110-220 volt Boston Ratio motors which are controlled by a Westinghouse lifetime magnetic starter. Power is furnished to the delivery chains through RC-50 silver link roller chains.

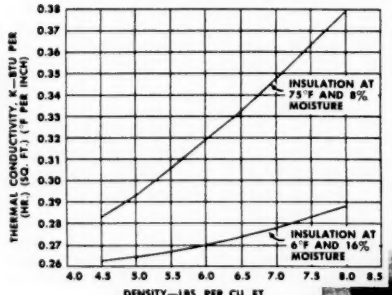


Perfection Vending Machine

Simplicity of lubrication has been one of the main points in design of the "Ice-A-Teria", as the new machine is called, and only the conveyor chain shaft bearings need service. The ration motors are equipped with oil specification name plates.

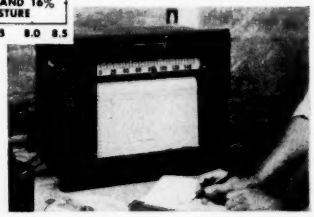
Installation of the "Ice-A-Teria" does not require any type of cutouts or anchorage with the exception of the delivery chute. The chute requires only one wall opening per vendor. The entire machine operates on standard power outlet of 110 volts but can be wired to meet the customer's specifications.

In-place field tests prove LOW "K" FACTOR



Left: Design curve of Palco Wool "K" factor based on in-place field test data.

Below: Electronic recorder used to register temperature at various points through insulated wall.



...for PALCO WOOL INSULATION in actual use

Employing impartial scientific techniques, extensive *in-place field tests* measure the values of insulating efficiency under actual operating conditions. From data gained, projected design curves establish the conductivity of installed insulation—supplementing theoretical laboratory computations. Design curves above show the low "K" factor of Palco Wool at various densities under existing moisture conditions for both high and low temperature sides of the insulation. For complete description of the tests with a practical analysis of the results, and additional valuable data, request Technical File No. IR-3

CERTIFIED INSULATION

THE PACIFIC LUMBER COMPANY

100 BUSH ST., SAN FRANCISCO 4, CALIFORNIA

35 EAST WACKER DRIVE, CHICAGO 1, ILLINOIS

PALCO INSULATION WOOL

New Low Temperature Floor Patching Material

PERMAMIX-C, a new low temperature floor patching material for temperatures ranging from 5 F. to minus 30 F. is announced by the Permamix Corporation, Chicago, Ill. It is described as the only material of its kind now available to industry with which floors can be patched or repaired with perfect ease and assurance at low temperatures as Permamix-C cannot freeze; therefore there is no danger of temperature damage to patch.

It is claimed to have all of the fine wearing qualities and features of standard Permamix and is readily distinguished by color designation of the package. It still comes packaged in the same 50 lb. net weight drum with the same ease of application by following the three simple steps shown on the package.

The manufacturers claim that no chipping, cutting or mixing equipment is required for its application.

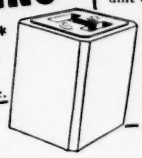
PACKING HOUSE

Saves Time, Trouble, Money

WITH **NEW STERLING**

KOOLER KUBES*

*Trademark International Salt Company, Inc.



"How good are Kooler Kubes? It used to take one man five to six hours per day to service our cooler units with salt. Now the same man services the same units in 2 hours 20 minutes with Kooler Kubes.

"And we are saving money on salt because Kooler Kubes do a better job.

"Along with this, we have not had to clean out a single unit in three months. We used to spend two hours per week per unit cleaning out the units and sprays."

Marhoefer Div. of Kuhner Packing Co.
Muncie, Indiana

Kooler Kubes are special, heavily compressed 50-lb. refrigeration salt cubes for unit coolers, brine spray cold diffusers, spray deck systems.

INTERNATIONAL SALT COMPANY, INC.
Scranton 2, Pennsylvania

☐ Please have a representative call.
☐ Please send additional information.

Signed:

NAME_____

COMPANY_____

ADDRESS_____

CITY_____

ZONE____ STATE_____

For Additional Information Send Coupon Now

REVOLUTIONARY NEW TREATMENTS MAKE DANDUX ICE BAGS BEST!

STANDS UP WITHOUT CRUMBLING!

- STIFFER
- STRONGER
- EASIER TO USE

METAL BOTTOMS WON'T BUCKLE, PULL OUT, FLAKE, RUST OR PEEL!

DANDUX

C. R. DANIELS, INC.
Daniels, Maryland

2109 Commerce St. DALLAS 1, TEXAS
549 W. Randolph St. CHICAGO 6, ILL.
121 E. Third St., CHARLOTTE, 2, N. C.

TRAFFIC NEVER STOPS

***when you repair your floors with* PERMAMIX**

Easy to apply—sets instantly—long wearing for year around use indoors or out—WILL NOT FREEZE—can be stored indefinitely and used in any temperature—lowers maintenance costs amazingly.

Here's all you do: Clean hole in any type floor, spread primer supplied in drum, fill in with PERMAMIX, tamp and dust with cement or floor dust, resume traffic immediately. It's that easy, for PERMAMIX feather edges and no cutting or chipping is required. No skilled labor is necessary, you need no special equipment, you have no mixing, waiting or production delays when you repair or patch your floors the easy, fast PERMAMIX way. Comes in handy, durable 50 lb. net weight drums.

NOW AVAILABLE! The new PERMA-MIX-C for patching in low temperatures from 5° above zero to -30° below.

PERMA Mix

Write or call for full details.

PERMAMIX CORPORATION
220 N. La Salle St. Cent. 6-1785 Chicago 1, Illinois

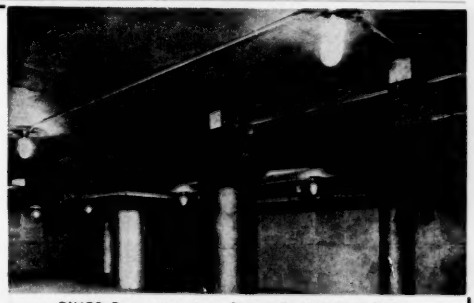
DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*
★ *Saves Weight*
★ *Saves Cost*

CAN BE USED WITH ANY REFRIGERANT

Write for descriptive folder

DETROIT ICE MACHINE COMPANY
2615 Twelfth St., Detroit 16, Mich.



DIMCO Evaporators in a Frozen Food Storage Room at Great Lakes Terminal Warehouse, Toledo, Ohio. A typical installation facilitating palletizing.

MANUFACTURERS' NEWS

Burge Ice Machine Fiftieth Anniversary

THE Burge Ice Machine Company of Chicago, Ill., Baker Refrigeration Corporation distributor is celebrating fifty years of continuous business activity. It was in 1902 that the first air conditioning system was installed in Brooklyn, N. Y., in a lithographing plant, and that same year E. H. Burge founded the well-known Burge Ice Machine Company. That year too, Theodore Roosevelt was President of the United States and sent a report to Congress from the Isthmiam Canal Company recommending the purchase of the Panama Canal Company for $40,000, all of which was preparatory to the building of the Panama Canal. James J. Jeffries was heavyweight champion of the world and the World Series Pennant was won by Pittsburgh with 100 games to their credit.

Six years after Mr. Burge had established his company, Joseph L. Baker, the founder of Baker Ice Machine Co., Inc., of Omaha, Nebraska, appointed Mr. Burge distributor for Baker refrigeration equipment in the States of Illinois, Indiana, Michigan, and Wisconsin, thus beginning an association that has continued through 50 years. Many of the early Baker refrigeration compressors are still in operation.

E. H. Burge, Chicago, Ill.

With the cooperation of the North American Car Company, the first mechanical refrigeration for railway cars was installed, and it was a great day for Mr. Burge and Mr. Baker and the North American Car Company officials when the first carload of beef and pork arrived in Chicago from Austin, Minn., with a 32 degree temperature inside the car. The Baker 3½x3½ inch refrigerating ammonia compressor, is still standard equipment in the Baker line. Since electric current was not available, the refrigerated cars were automatically controlled by a bi-metal element that closed the liquid valve at a pre-determined temperature.

Some prominent installations of Baker equipment by Burge Ice Machine Co. include: the restaurants in the Merchandise Mart, Chicago (the world's largest building); Booth Fisheries; Swift & Company which has several hundred Baker compressors in operation; also Armour & Co. and Wilson & Company in the meat packing field. Mr. Kraft of the Kraft Cheese Company relied on Mr. Burge for refrigeration recommendations during the early days of this company. Burge Ice Machine Co. continues to install Baker refrigeration equipment in the Kraft Cheese factories and distribution plants throughout the Nation.

One of the most recent Burge installations is the Continental Freezer Company of Chicago, Ill., with cold storage space of 2,756,000 cubic feet. Part of this space is held at minus 10 F. and another part at minus 20 F. by Baker refrigeration compressors. Baker year-round air conditioning is used for the general offices.

There's nothing like a VOSS VALVE

to make good compressors operate better

to make worn compressors operate like new!

It is a matter of record that every time an ordinary compressor valve is replaced with a specially designed VOSS valve, the immediate result is increased efficiency and greater output . . . and this record covers thousands of installations, as reports testify.

VOSS VALVES are made to specifications for air, gas and ammonia compressors; from 1" to 16" in diameter and for pressures from minus 27HG to 7,500 pounds and for speeds up to 1,000 rpm and above.

VOSS VALVES are machined from solid stock (not cast)—PLATES are machined and ground (not press formed) for precise high-tolerance fit; VALVES and PLATES are of heat-treated alloy and stainless steel; the PLATES are dimensionally stable, ductile, resist fracture, high temperatures and corrosion; withstand fatigue; won't chip, crack or score cylinder walls.

Don't be fooled by similarity in appearance. Be sure your replacement valves and plates are marked "VOSS" and obtain the VOSS values developed by 32 years of specialized compressor valve engineering and experience.

VOSS VALVES and PLATES ASSURE

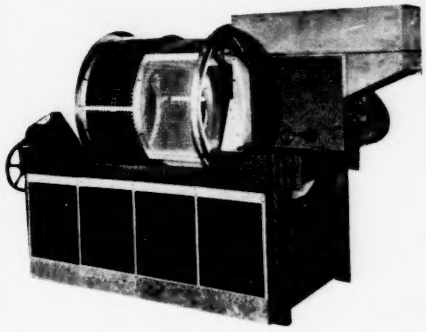
- Quiet, vibration-free operation
- 20 to 60% more valve area
- Less power consumption
- Low Pressure loss
- Normal discharge temperature
- Lower operating costs

To increase the efficiency of your compressor, send us the name, bore, stroke and speed of your machine. Our detailed proposal will be sent without obligation.

J. H. H. VOSS VALVES REG. U.S. PAT. OFF.

J. H. H. VOSS CO. INCORPORATED

783 East 144th Street, New York 54, N. Y.



Lilly ICIZERS are . . .

- *SAFE*
- *ECONOMICAL*
- *SANITARY*
- *EFFICIENT*

Yes, in all 4 ways a Lilly Ice Sizer ranks at the top—SAFE—worker protected from moving parts—EFFICIENT—complete size control—SANITARY—clean, pure, taste free ice—ECONOMICAL—simple, rugged construction—minimum repairs.

Model 14A shown above is the ideal Sizer for low headroom vaults. Only 6' high overall, this Sizer will produce 12 to 15 tons per hour and a size of ice for every need.

Lilly ICIZERS are built in many models and types to meet your plant requirements—with capacities from 10 to 35 tons per hour. Sized ice is the progressive, profitable way to boost ice profits.

Now is the time to begin boosting your profits. Our engineers will be glad to assist you in planning your operation. Write today for Catalog No. 302 and full details on how to increase your profits with sized ice.

LILLY CRUSHERS
Capacities from
10 to 35 tons/hr.
Write for Crusher Catalog

THE LILLY COMPANY
466 Union Avenue, Memphis 1, Tenn.

ICE TOOLS & SUPPLIES
PLANT EQUIPMENT
Write for
New Catalog & Prices

Snow-icing opens new markets for you

Ideal refrigeration for produce is provided by this Link-Belt Ice Crusher-Slinger. For many perishable products, you'll find this low-cost machine a real business-builder.

WRITE FOR BOOK 2382
for all the facts

LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

With a LINK-BELT Ice Crusher-Slinger you can give shippers the improved refrigeration they're demanding today

THIS modern method of icing railway cars and trucks will bring you new business.

Perishable items — produce, seafood, meat, bottled milk — reach market in better condition when top-iced with a Link-Belt Ice Crusher-Slinger.

There's a model for your exact needs. From 15 to 60 tons per hour capacity, stationary or portable, electric or gasoline powered. Find out about this money-maker today.

LINK-BELT
ICE CRUSHER-SLINGERS

12,391

Creamery Package Promotes Two in Pacific Northwest

THE Creamery Package Manufacturing Company announces that John B. Hineline, with the Los Angeles branch office, has been made Creamery Package Portland Branch

John B. Hineline

Manager. Mr. Hineline attended the University of Minnesota and during World War II saw overseas service with the Navy as a fighter pilot in the Pacific Area.

Chester J. Bell

"Johnny" as he is known to his many friends in the dairy industry, was first employed in the Creamery Package Los Angeles branch office. His next assignment was as a salesman in the Los Angeles city territory. Later on he called on many of the large national dairy concerns who have offices in the Los Angeles area.

Chester J. Bell, who managed Creamery Package's Portland branch for the past several years has been made regional refrigeration engineer for the states of Oregon, Washington, Montana and the western part of Idaho. Mr. Bell, has a Mechanical Engineering degree from the University of Colorado and is also a member of the American society of Refrigeration Engineers.

CATALOGS AND BULLETINS

New Movie on Ground Water Development

A NEW 16 mm. color motion picture with narration has been completed by Layne & Bowler, Inc., and associate companies, on ground water development. The picture, entitled "Deep Water," depicts a complete story of well water development from the initial survey through engineering, construction, testing and actual use, including "on the scene shots" of Layne men and equipment at work on water development projects.

This picture not only will enable sales engineers to portray advantageously the outstanding services offered by Layne ground water development companies, but also will be an excellent aid to engineering schools, governmental departments, municipal planning boards, clubs and many other individuals and organizations concerned with the development of ground water for domestic and commercial uses.

The Layne motion picture, "Deep Water," is available for showing without cost to city councils, engineering clubs, schools, colleges, governmental agencies and departments, and others interested in ground water development. For complete information, write to Layne & Bowler, Inc., P. O. Box No. 6697, Hollywood Station, Memphis 8, Tenn.

Canvas Making Story Told in Pictures

NEW Horizons," an attractive 20-page booklet printed on heavy paper has been issued by C. R. Daniels, Inc., Baltimore, Md. It is a pictorial story of new techniques, new materials and new processes that the Daniels Company can make available to users of canvas and canvas products. Starting with picture of the plant, the story moves along with pictures of the process to the finished product and some samples of the end product.

New Bulletin on Tube Ice Machine

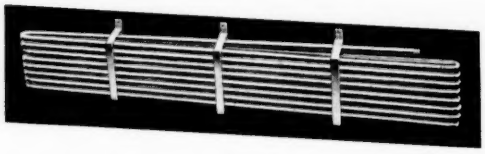
A BULLETIN on the Vogt automatic tube-ice machine has been issued by The Henry Vogt Machine Co., Louisville, Ky. The four-page bulletin gives description and operating details, with illustrations of the product and the machine. Dimensions and specifications also are given for the 5000 pound capacity unit. Typical 5,000 pound and 2,000 pound capacity installations are illustrated.

Map Shows How to Reach Waynesboro

HIGHWAY, railway and airline connections to Waynesboro, Pa., is the subject of a bulletin issued by the Frick Co., Waynesboro. The four-page bulletin has an airview of Waynesboro, and a highway, airline and railroad map of the country surrounding Waynesboro.

Bulletin on Large Four Cylinder Compressors

AN "Ice and Frost" bulletin No. 651-B has been issued by The Frick Company, Waynesboro, Pa., covering large four-cylinder compressors. It is illustrated throughout, with some pictures in color and drawings. A center spread, sectional drawing shows all the parts, each labeled.



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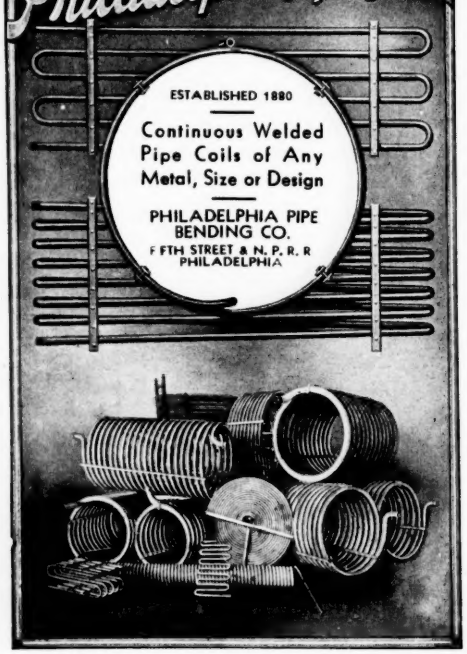
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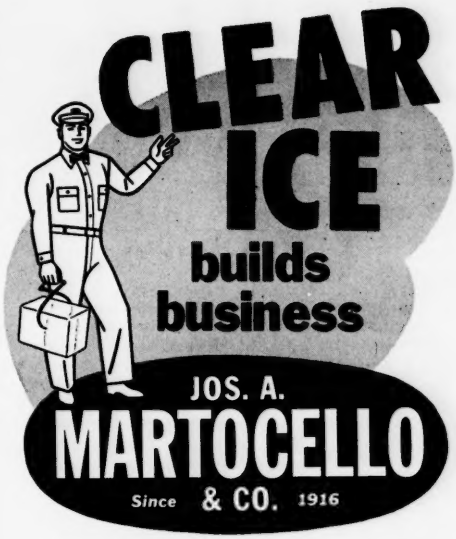

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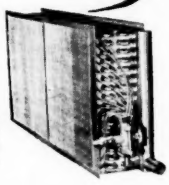

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Roots-Connersville Blower Corp., Connersville, Ind.

PURGERS
Armstrong Machine Works, Three Rivers, Mich.
Frick Company, Waynesboro, Pa.
Rex Engineering & Sales Co., Oklahoma City, Okla.

RAW WATER FREEZING SYSTEMS
Frick Co., Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Penna.
Vogt Machine Co., Henry, Louisville, Ky.

REBOILERS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

REFRIGERATED ICE STATIONS
Refrigeration Engineering Co., Montgomery, Minn.
S & S Vending Machine Co., San Jose, Calif.

REFRIGERATING AND ICE MAKING MACHINERY
(See Ice Making and Refrigerating Machinery)

RESPIRATORS
Acme Protection Equipment Co., Chicago, Ill.

RUST PREVENTATIVES
Bower Chemical Mfg. Co., Henry Philadelphia, Pa.
Wright Chemical Corp., Chicago, Ill.

SCORING MACHINES
Frick Company, Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.
Perfection Ice Scoring Machine Co., Fort Worth, Texas

SECOND HAND MACHINERY
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., West Englewood, N. J.

SEPARATORS OIL, STEAM AND AMMONIA
Frick Company, Waynesboro, Pa.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

SHOULDER PADS
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.
Vivian Mfg. Co., St. Louis, Mo.

SIZED ICE EQUIPMENT
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.
Vivian Mfg. Co., St. Louis, Mo.

SPRAY COOLING SYSTEMS
Ruppright, Siegfried, Los Angeles, Calif.

SPRAY NOZZLES
Martocello & Co., Jos. A., Philadelphia, Penna.

STORAGE HEATERS
National Pipe Bending Co., New Haven, Conn.

STRAINERS
Martocello & Co., Jos. A. Philadelphia, Pa.

TANKS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

TARPAULINS
Daniels, Inc., C. R., Baltimore, Md.
Index Coupon & Supply Co., La Porte, Ind.
Lilly Co., The, Memphis, Tenn.
Vivian Mfg. Co., St. Louis, Mo.

THERMOMETERS
Martocello & Co., Jos. A., Philadelphia, Pa.
Taylor Instrument Companies, Rochester, New York

TIERING MACHINES
Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

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Rex Engineering & Sales Co., Oklahoma City, Okla.

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Niagara Blower Co., New York, N. Y.
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Kehoe Machinery Co., Inc., R. P., West Englewood, N. J.

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Phillips & Co., H. A., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

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Voss, Inc., J. H. H., New York, N.Y.

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Vogt Machine Co., Henry, Louisville, Ky.

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Barada & Page, Inc., Kansas City, Mo.
International Salt Co. Inc., Scranton, Pa.
Wright Chemical Corp., Chicago, Ill.

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Frick Company, Waynesboro, Pa.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
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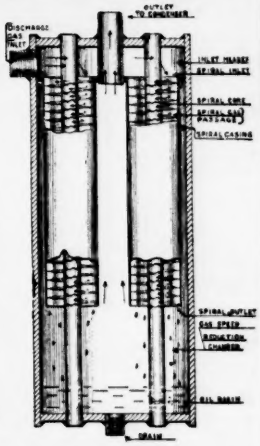

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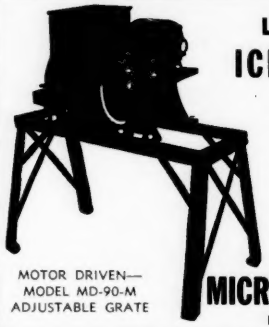

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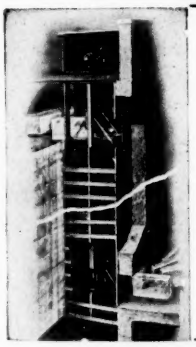

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Reports, Appraisals and Management

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- COMPRESSORS—3x3 to 12x12
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- COMPRESSORS—Diesel or Steam driven
- COMPLETE ICE PLANTS—15 to 50 Tons
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Write or call for complete list of new and reconditioned ice making equipment.

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278 W. Englewood Ave. West Englewood, N. J.

TEaneck 7-3916

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RATES: $4.00 for 50 words or less; 70c for each additional 10 words or fraction thereof; $1 per line for bold face headings; $10.50 per inch for line listings.

ICE PLANTS—for sale

FOR SALE—Zenith 3 ton portable ice plant, with 10 ton motor and extra compressor for storage room. Can operate at present location or move. Write Zenith Ice Co., Box 414, Garden City, Kansas.

FOR SALE—35 ton ice plant; Diesel electric power. A-1 condition; 60 per cent railroad icing. City of 15,000 in Central Wisconsin. No competition; sell to several surrounding towns. Address Box JU-4, c/o Ice and Refrigeration.

FOR SALE—33 ton ice plant; over 400 lockers, good meat curing, meat processing, chill rooms, storage rooms, good location for slaughtering and butchering. Room for expansion; building 74x158. 3 York compressors, 5", 6 and 7½. Metter Ice Plant, Metter, Georgia.

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Plant is in excellent condition and must be moved from premises. Equipment includes 3 hoists 2 ton each 9 can lift. York high pressure air system 6 vertical agitators, 1450 galvanized ice cans, 3 steel ice tanks and all other necessary equipment.

MERCHANTS ICE & COLD STORAGE CO.
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FOR SALE—Modern 20 ton ice manufacturing plant with 300 lockers. Year around business; two ice vending machines included. Only locker plant in county. Equipt with low and high temperature storage. Cash required, about $50,000. Located in beautiful Western Maryland. Reason for selling, health. Address Box JU-15, c/o Ice and Refrigeration.

FOR SALE—18 ton ice plant in good running order. Includes York 7½x7½, Frick 7x7 compressor, complete with all auxiliary. Deep well with 52° water. Two sub stations. One 75 h.p. Fairbanks-Morse engine; one 37½ h.p. Fairbanks-Morse engine; one 40 h.p. Fairbanks-Morse engine with generating set, 60 cyl, 2400 volts with switchboard and transformers. Good trade territory; no other plant within 50 miles. Memphis Ice Co., Memphis, Missouri.

USED EQUIPMENT-wanted & for sale

FOR SALE—200 freezer lockers 24-30-16, 100 drawer @ $5.00 each, 100 door @ $3.50 each. 75 gal. steam kettle $135.00. 6 h.p. vertical tube boiler $225.00. As is at Metter Ice Plant, Metter, Georgia.

FOR SALE—1 each Creamery Package 5x5 and Baker 5x5 self-contained units, 5x5 and 6½x 6½ Yorks with motors, 9x9 York, 9x9 York direct connected to 75 h.p. synchronous motor, 40 ton open type ammonia condenser, shell and tube condensers, York trunk type freezing coil complete with trap and agitator. Write us. Parke Pettegrew & Son Company, 370 W. Broad St., Columbus 8, Ohio.

USED EQUIPMENT—continued

FOR SALE—100—16 gauge riveted ice cans, 11"x22"x49" I.D.—50", O.D. STD. Price F.O.B. our plant, $2.50 each. Sharon Ice & Coal Company, Sharon, Penna.

FOR SALE—1 Fairbanks-Morse Diesel engine 240 h.p. 4 piston, priced at $3,000.00. 1 Fairbanks-Morse Diesel engine 60 h.p. priced at $800.00. Write or call North Pole Ice Co., 614 Gaston Ave., Fairmont, West Va. Phone 2448.

FOR SALE—York Corp. V.S.A. ammonia compressors; one 6½x6½, one 7½x7½, one 8x8. Also two 7x5 Pennsylvania Pump Co. air compressors. Two 12x10 Union Steam Pump Co. air compressors. All machines with or without motors. Stock of good used ice cans, 300 & 400 lb. sizes. David Gordon, 1502 Indiana Ave., Chicago 5, Ill.

FOR SALE—Kold Hold freezer plate units, 18 sets 6 plates per set 2'x12.5' per plate, 18 sets 3 plates per set 2'x12.5' per plate, 8100 sq. ft. evaporator surface in all. Suitable for large freezer or cooler room. Tropical Ice & Cold Storage Company, 3900 Tchoupitoulas St., New Orleans 2, La. Pho....ne UPtown 7404.

FOR SALE

Complete ice making plants, ammonia compressors all sizes, shell & tube condensers, brine coolers, ice cans, valves and fittings.

B & E REFRIGERATING CO.
2 ORANGE ST., NEWARK 2, N. J.
Phone: Mitchell 3-7790 Cable Address "BERECO"

FOR SALE—1000 All-Steel Equipment Company frozen food lockers, 5 years old; white with green trim. Doors $4.00, drawers $5.00 each, F.O.B. our plant. Sharon Coal & Ice Company, Sharon, Penna.

FOR SALE—Brand new latest model ammonia compressors. One 8"x8" Frick, one 5½"x5½" Vilter, two 5"x5" Worthingtons; priced right. Immediate shipment. Write Box JU-3, c/o Ice and Refrigeration.

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150 ton York—13 can pull—50 ton Frick—27 can pull—35 ton York—6 can pull—18 ton Frick—2 can pull.

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1—12½x14½ York with 175 h.p. motor.
1—10x10 York with 100 h.p. motor.
1—9x9 Frick with 50 h.p. motor.
2—8½x8½ Vilters with 75 h.p. motors.
1—6x6 York with 30 h.p. motor.
2—100 h.p. 300 r.p.m. synchronous motors.
1—16"x18' horizontal enclosed type condenser.
Miller and Perfection scoring machines.
Low pressure blowers, agitators, pumps, etc.

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2—8x8 high speed Carbondale Comp.
2—9x9 Fricks, ea. with 80 h.p. syn. motor 300 r.p.m.
3—sets of 10x10 duplex York or Frick, with 225 h.p. syn. motor 300 r.p.m.

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278 W. Englewood Ave. West Englewood, N. J.
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FOR SALE—Bargain in compressors. Frick 10x10, 9x9, 8x8, 7x7, 6x6. Vilter 3½x3½ self-contained. Worthington 7½ h.p. Freon. Write us. Dismantling three large ice plants; all equipment must be sold. Gordon Equipment Company, 6530 W. Jefferson Ave., Detroit 17, Mich.

FOR SALE—Frick compressor 10x10 connected to 75 h.p. G.E. motor 2200 V. 870 r.p.m., with panel ammonia gauges and G.E. starter compensator and temperature relay; will sacrifice to best offer. Chemical Commodities, Inc., Ridge Bldg., Kansas City 6, Missouri.

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FOR SALE

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1—Vilter 155 tube 12 ft. vert. cond.	550.00
1—Vilter 8½x8½ w/75 h.p. motor	2250.00
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Complete Ice Plants 15-75 Ton
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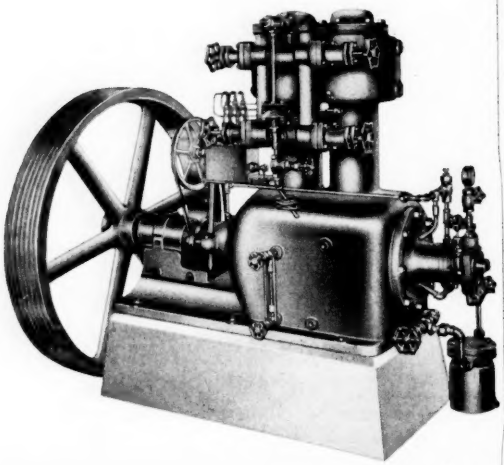

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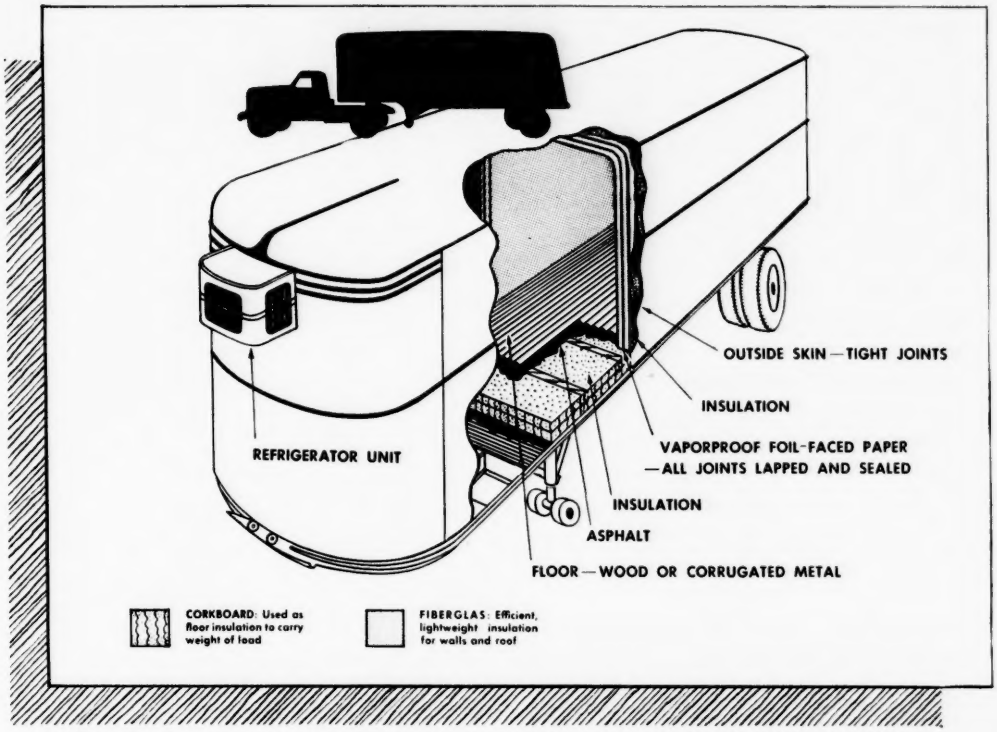

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For unsealed equipment where insulation cost is not the primary consideration, corkboard is the ideal material. Cork has the high natural moisture resistance needed for long life in unsealed construction.

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Super Market Chooses the "Series 50" for Wide-Range Storage Requirements

The newest store in Wrigley's Detroit super market chain is a model of food protection efficiency. Of special interest in this store are the cold storage doors. Constructed of Marine plywood—in which the plies are bonded together into an integral unit by a synthetic resin adhesive, hot pressed and tempered after setting—the doors are completely waterproof, bacteria-proof and fungi-proof!

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SILLSEAL GASKET
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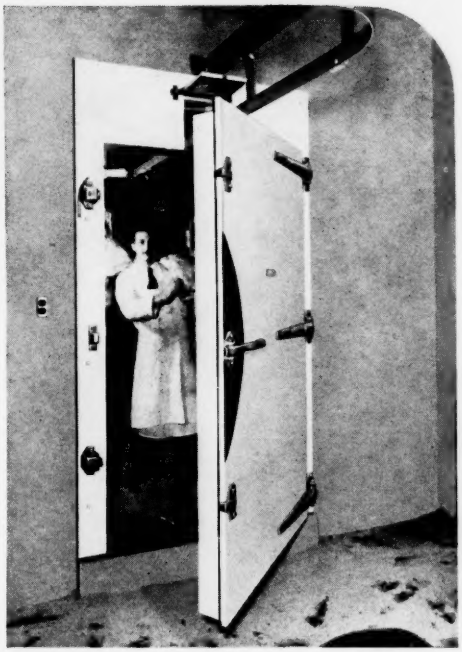
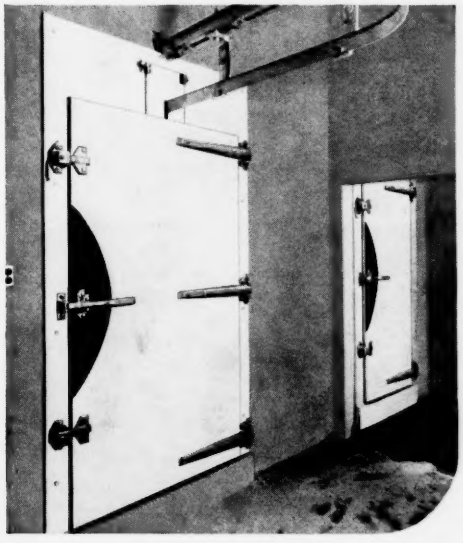


Track Door speeds movement of meat and other perishables in and out of storage room. Equipped with the exclusive Jamison "Adjustoflex" Track Port Opener, foolproof operation and tight seal of door are assured when door is closed. View below shows Track Door closed. E-Z-Open two point fasteners maintain a uniformly tight seal.



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